

SEQUENCE LISTING

Sequence

- 5 <110> Plaetinck, Geert
 Platteeuw, Christ
 Mortier, Katharine
10 Bogaert, Thierry
- 15 <120> Characterisation of Gene Function using dsRNA
 Inhibition
- 20 <130> D0590/7003
- 25 <140> 09/347,311
 <141> 1999-07-02
- 30 <150> GB 9814536.0
 <151> 1998-07-03
- 35 <150> GB 9827152.1
 <151> 1998-12-09
- 40 <160> 29
- 45 <170> PatentIn Ver. 2.0
- 50 <210> 1
 <211> 3216
- 55 <212> DNA
 <213> Artificial Sequence
- 60

<220>

<223> Description of Artificial Sequence: plasmid DNA

5

<400> 1

gagtgcacca tatgcggtgt gaaataccgc acagatgcgt aaggagaaaa taccgcatca 60
ggcgaaattg taaacgttaa tattttgtta aaattcgcgt taaatatttg ttaaatacgc 120
tcatttttta accaataggg cgaaatcggc aaaatccctt ataaatcaaa agaataagacc 180
15 gagatagggg tgagtgttgt tccagtttgg aacaagagtc cactattaaa gaacgtggac 240
tccaacgtca aagggcgaaa aaccgtctat cagggcgatg gccactacg tgaaccatca 300
cccaaatcaa gttttttgcg gtcgaggtgc cgtaaagctc taaatcggaa ccctaaaggg 360
20 agccccgat ttagagcttg acggggaaag cggcgaaacg tggcgagaaa ggaagggaag 420
aaagcgaaag gagcgggcgc tagggcgctg gcaagtgtag cggtcacgct gcgcgtaacc 480
25 accacacccg ccgcgcttaa tgcgcgcta cagggcgctt ccattcgcca ttcaggctgc 540
gcaactgttg ggaagggcga tcgggtgcgg cctcttcgct attacgccag ctggcgaaaag 600
ggggatgtgc tgcaaggcga ttaagttggg taacgccagg gttttcccag tcacgacgtt 660
30 gtaaaacgac ggccagtga ttaagttggg taacgccagg gttttcccag tcacgacgtt 660
gtaaaacgac ggccagtga ttaagttggg taacgccagg gttttcccag tcacgacgtt 720
cccggggatc ctctagagtc gaaagcttct cgcctatag tgagtcgtat tacagcttga 780
35 gtattctata gtgtcaccta aatagcttgg cgtaatcatg gtcatactgt tttcctgtgt 840
gaaattgtta tccgctcaca attccacaca acatacgagc cggaagcata aagtgtaaag 900
cctgggggtgc ctaatgagtg agctaactca cattaattgc gttgcgctca ctgcccgtt 960
40 tccagtcggg aaacctgtcg tgccagctgc attaatgaat cggccaacgc gcggggagag 1020
gcggtttgcg tattgggcgc tcttcgctt cctcgctcac tgactcgtg cgtcggctg 1080
45 ttcggctgcg gcgagcggta tcagctcact caaaggcggg aatacgggta tccacagaat 1140
caggggataa cgcaggaaag aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta 1200
50 aaaaggccgc gttgctggcg tttttcgata ggctccgcc ccctgacgag catcacaaaa 1260
atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc 1320
cccctggaag ctccctcgtg cgtctcctg ttccgacct gccgcttacc ggatacctgt 1380
55 ccgcctttct cccttcggga agcgtggcgc tttctcatag ctcacgctgt aggtatctca 1440
gttcgggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagcccc 1500
60 accgctgcgc cttatccggg aactatcgtc ttgagtccaa cccggtaaga cagcacttat 1560

cgccactggc agcaqccact ggttaacgga tggcgtgc gaggatgta ggcggtgcta 1620
cagagttctt gaagtggtag cctaactacg gctacactag aaggacagta tttggtatct 1680
5 gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctcttga tccggcaaac 1740
aaaccaccgc tggtagcggg ggtttttttg tttgcaagca gcagattacg cgcagaaaaa 1800
10 aaggatctca agaagatcct ttgatctttt ctacgggggc tgacgctcag tggaacgaaa 1860
actcacgtta agggattttg gtcattgagat tatcaaaaag gatcttcacc tagatccttt 1920
taaattaaaa atgaagtttt aatcaatct aaagtatata tgagtaaact tgggtctgaca 1980
15 gttaccaatg cttaatcagt gaggcaccta tctcagcgat ctgtctatct cgttcattcca 2040
tagttgcctg actccccgc gtgtagataa ctacgatacg ggaggggctta ccattctggcc 2100
ccagtgtgc aatgataccg cgagaccac gtcaccggc tccagattta tcagcaataa 2160
20 accagccagc cggaagggcc gagcgcagaa gtggtcctgc aactttatcc gcctocatcc 2220
agtctattaa ttgttgccgg gaagctagag taagtagttc gccagttaat agtttgcgca 2280
25 acgttggttg catgtctaca ggcattcgtg tgtcacgctc gtcgtttggt atgggttcat 2340
tcagctccgg ttcccaacga tcaaggcgag ttacatgatc cccatgttg tgcaaaaaag 2400
cggtagctc cttegggtct ccatcgttg tcagaagtaa gttggccgca gtgttatcac 2460
30 tcatggttat ggcagcactg cataattctc ttactgtcat gccatccgta agatgctttt 2520
ctgtgactgg tgagtactca accaagtcatt tctgagaata ccgcgcccgg cgaccgagtt 2580
35 gctcttgccc ggcgtcaata cgggataata gtgtatgaca tagcagaact ttaaaagtgc 2640
tcattcattg aaaacgttct tcggggcgaa aactctcaag gatcttaccg ctggttgagat 2700
ccagttcgat gtaaccact cgtgcacca actgatcttc agcatctttt actttcacca 2760
40 gcgtttcttg gtgagcaaaa acaggaaggc aaaatgccgc aaaaaaggga ataaggcgca 2820
cacggaaatg ttgaatactc atactcttcc tttttcaata ttattgaagc atttatcagg 2880
45 gttattgtct catgagcgga tacatatttg aatgtattta gaaaaataaa caaatagggg 2940
ttccgcgcac atttccccga aaagtgccac ctgacgtcta agaaaccatt attatcatga 3000
50 cattaaccta taaaaatagg cgtatcacga ggccctttcg tctcgcgcgt ttcgggtgatg 3060
acggtgaaaa cctctgacac atgcagctcc cggagacggg cacagcttgt ctgtaagcgg 3120
atgccgggag cagacaagcc cgtcagggcg cgtcagcggg tgttgccggg tgtcggggct 3180
55 ggcttaacta tgcggcatca gagcagattg tactga 3216

<210> 2

<211> 6460

<212> DNA

5 <213> Artificial Sequence

<220>

10 <223> Description of Artificial Sequence: plasmid DNA

15 <400> 2

ctagcatgaa cacgattaac atcgctaaga acgacttctc tgacatcgaa ctggctgcta 60
tcccgttcaa cactctggct gaccattacg gtgagcggtt agctcgcgaa cagttggccc 120
20 ttgagcatga gtcttacgag atgggtgaag cacgcttcg caagatgttt gagcgtcaac 180
ttaaagctgg tgaggttgcg gataacgctg ccgccaagcc tctcatcact accctactcc 240
25 ctaagatgat tgcacgcac aacgactggt ttgaggaagt gaaagctaag cgcggaagc 300
gcccgcagc cttccagttc ctgcaagaaa tcaagccgga agccgtagcg tacatcacca 360
ttaagaccac tctggcttgc ctaaccagtg ctgacaatac aaccgttcag gctgtagcaa 420
30 gcgcaatcgg tggggccatt gaggacgagg ctgcttcggt tcgtatccgt gaccttgaag 480
ctaagcactt caagaaaaac gttgaggaac aactcaaca gcgcgtaggg cacgtctaca 540
35 agaaagcatt tatgcaagtt gtcgaggctg acatgctctc taagggtcta ctggtggcg 600
aggcgtggtc ttcgtggcat aaggaagact ctattcatgt aggagtacgc tgcacgaga 660
tgctcattga gtcaaccgga atggttagct tacaccgcca aaatgctggc gtagtaggtc 720
40 aagactctga gactatcgaa ctgcacctg aatacgtga ggctatcgca acccgtgcag 780
gtgcgctggc tggcatctct ccgatgttcc aaccttgcgt agttcctcct aagccgtgga 840
45 ctggcattac tgggtggggc tattgggcta acggctgctg tcctctggcg ctggtgcgta 900
ctcacagtaa gaaagcactg atgcgctacg aagacgttta catgcctgag gtgtacaaag 960
cgattaacat tgcgcaaaac accgcatgga aaatcaaca gaaagtccta gcggtcgcca 1020
50 acgtaatcac caagtggaag cattgtccgg tcgaggacat ccctgcgatt gagcgtgaag 1080
aactcccgat gaaaccggaa gacatcgaca tgaatcctga ggctctcacc gcgtggaaac 1140
55 gtgctgccgc tgctgtgtac cgcaaggaca gggctcgcaa gtctcgccgt atcagccttg 1200
agttcatgct tgagcaagcc aataagtttg ctaaccataa ggccatctgg ttcccttaca 1260
acatggactg gcgcggctgt gtttacgccg tgtcaatgtt caaccgcaa ggtaacgata 1320

60

tgaccaaagg actgcttacg ctggcgaaag gtaaaccaat cggttaaggaa ggttactact 1380
 ggctgaaaat ccacgggtgca aactgtgcgg gtgtcgataa gggtccgttc cctgagcgca 1440
 5 tcaagttcat tgaggaaaac cacgagaaca tcatggcttg cgctaagtct cactgggaga 1500
 acacttgggt ggctgagcaa gattctccgt tctgcttcct tgcgttctgc tttgagtacg 1560
 ctgggggtaca gcaccacggc ctgagctata actgctccct tccgctggcg tttgacgggt 1620
 10 cttgctctgg catccagcac ttctccgcga tgctccgaga tgaggtaggt ggtcgcgcgg 1680
 ttaacttgct tcctagttag accgttcagg acatctacgg gattgttgct aagaaagtca 1740
 15 acgagattct acaagcagac gcaatcaatg ggaccgataa cgaagtagtt accgtgaccg 1800
 atgagaacac tggtgaaatc tctgagaaag tcaagctggg cactaaggca ctggctggtc 1860
 aatggctggc tcacgggtgt actcgcagtg tgactaagcg ttcagtcatt acgctggctt 1920
 20 acgggtccaa agagtccggc ttccgtcaac aagtgtgga agataccatt cagccagcta 1980
 ttgattccgg caagggtccg atgttcactc agccgaatca ggctgctgga tacatggcta 2040
 25 agctgatttg ggaatctgtg agcgtgacgg tggtagctgc ggttgaagca atgaactggc 2100
 ttaagtctgc tgctaagctg ctggctgctg aggtcaaaga taagaagact ggagagattc 2160
 ttcgcaagcg ttgcgtgtg cattgggtaa ctctgatgg tttccctgtg tggcaggaat 2220
 30 acaagaagcc tattcagacg cgcttgaacc tgatgttctt cggtcagttc cgcttacagc 2280
 ctaccattaa caccaacaaa gatagcgaga ttgatgcaca caaacaggag tctgggtatc 2340
 35 ctctaactt tgtacacagc caagacggta gccaccttcg taagactgta gtgtgggcac 2400
 acgagaagta cggaatcgaa tcttttgac tgattcacga ctcttcggt accattccgg 2460
 ctgacgtgc gaacctgttc aaagcagtgc gcgaaactat gggtgacaca tatgagtctt 2520
 40 gtgatgtact ggctgatttc tacgaccagt tcgctgacca gttgcacgag tctcaattgg 2580
 acaaatgcc agcattccg gctaaaggta acttgaacct ccgtgacatc ttagagtcgg 2640
 45 acttcgcgtt cgcgtaacca tggattgat atctgagctc cgcacggcc gctgtcatca 2700
 gatcgccatc tcgcgccgt gcctctgact tctaagtcca attactcttc aacatcccta 2760
 catgctcttt ctccctgtgc tcccacccc tatttttgtt attatcaaaa aaacttcttc 2820
 50 ttaatttctt tgttttttag cttcttttaa gtcacctta acaatgaaat tgtgtagatt 2880
 caaaaataga attaattcgt aataaaaagt cgaaaaaat tgtgctccct cccccatta 2940
 55 ataataattc tatcccaaaa tctacacaat gttctgtgta cacttcttat gtttttttta 3000
 cttctgataa attttttttg aaacatcata gaaaaaacg cacacaaaat accttatcat 3060
 atgttacgtt tcagtttatg accgcaattt ttatttcttc gcacgtctgg gcctctcatg 3120
 60

acgtcaaatc atgctcatcg tgaaaaagt ttggagtatt tttggaattt ttcaatcaag 3180
tgaaagttta tgaaattaat tttcctgctt ttgctttttg ggggtttccc ctattgtttg 3240
5 tcaagagttt cgaggacggc gtttttcttg ctaaaatcac aagtattgat gagcacgatg 3300
caagaaagat cggaagaagg tttgggtttg aggctcagtg gaaggtgagt agaagttgat 3360
aatttgaaag tggagtagtg tctatggggt ttttgctta aatgacagaa tacattccca 3420
10 atataccaaa cataactgtt tcctactagt cggccgtacg ggccttttcg tctcgcgcgt 3480
ttcggtagtg acggtgaaaa cctctgacac atgcagctcc cggagacggg cacagcttgt 3540
15 ctgtaagcgg atgccgggag cagacaagcc cgtcagggcg cgtcagcggg tgttggcggg 3600
tgtcggggct ggcttaacta tgcggcatca gagcagattg tactgagagt gcaccatatg 3660
cgggtgtgaaa taccgcacag atgcgtaagg agaaaatacc gcatcaggcg gccttaaggg 3720
20 cctcgtgata cgcctatttt tataggttaa tgtcatgata ataatggttt cttagacgtc 3780
agggtggcact tttcggggaa atgtgcgcgg aaccctatt tgtttatttt tctaaataca 3840
25 ttcaaatacg tatccgctca tgagacaata accctgataa atgcttcaat aatattgaaa 3900
aaggaagagt atgagtattc aacatttcg tgtcgcctt attccctttt ttgcggcatt 3960
ttgccttctt gtttttgctc acccagaaac gctgggtgaaa gtaaaagatg ctgaagatca 4020
30 gttgggtgca cgagtgggtt acatcgaact ggatctcaac agcggtaaga tccttgagag 4080
ttttcgcccc gaagaacggt ttccaatgat gagcactttt aaagttctgc tatgtggcgc 4140
35 ggtattatcc cgtattgacg ccgggcaaga gcaactcggg cggcgcatc actattctca 4200
gaatgacttg gttgagtact caccagtcac agaaaagcat cttacggatg gcatgacagt 4260
aagagaatta tgcagtgtg ccataaccat gagtgataac actgcggccca acttacttct 4320
40 gacaacgatc ggaggaccga aggagctaac cgcttttttg cacaacatgg gggatcatgt 4380
aactcgcctt gatcgttggg aaccggagct gaatgaagcc ataccaaacg acgagcgtga 4440
45 caccacgatg cctgtagcaa tggcaacaac gttgcgcaa ctattaactg gcgaactact 4500
tactctagct tcccggcaac aattaataga ctggatggag gcggataaag ttgcaggacc 4560
acttctgcgc tcggcccttc cggctggctg gtttattgct gataaatctg gagccggtga 4620
50 gcgtgggtct cgcggtatca ttgcagcact ggggccagat ggtaagccct cccgtatcgt 4680
agttatctac acgacgggga gtcaggcaac tatggatgaa cgaaatagac agatcgtga 4740
55 gataggtgcc tcaactgatta agcattggta actgtcagac caagtttact catatatact 4800
ttagattgat ttaaaacttc atttttaatt taaaaggatc taggtgaaga tcctttttga 4860
taatctcatg accaaaatcc cttaacgtga gtttcgttc cactgagcgt cagaccccg 4920
60

agaaaagatc aaaggatctt cttgagatcc tttttttctg cgcgtaatct gctgcttgca 4980
aacaacaaaaa ccaccgctac cagcgggtgg ttgtttgccg gatcaagagc taccaactct 5040
5 ttttccgaag gtaactggct tcagcagagc gcagatacca aatactgtcc ttctagtgtg 5100
gccgtagtta ggccaccact tcaagaactc tgtagcaccg cctacatacc tcgctctgct 5160
aatcctgtta ccagtggctg ctgccagtgg cgataagtcg tgtcttaccg ggttggactc 5220
10 aagacgatag ttaccggata aggcgcagcg gtcgggctga acgggggggtt cgtgcacaca 5280
gccagcttg gagcgaacga cctacaccga actgagatac ctacagcgtg agcattgaga 5340
15 aagcgccacg cttcccgaag ggagaaaggc ggacaggtat ccggtaaagc gcagggtcgg 5400
aacaggagag cgcacgaggg agcttccagg gggaaacgcc tggatatctt atagtcctgt 5460
cgggtttcgc cacctctgac ttgagcgtcg atttttgtga tgctcgtcag gggggcggag 5520
20 cctatggaaa aacgccagca acgcggcctt ttacgggtc ctggcctttt gctggccttt 5580
tgctcacatg ttctttcctg cgttatcccc tgattctgtg gataaccgta ttaccgcctt 5640
25 tgagtgagct gataccgctc gccgcagccg aacgaccgag cgcagcagat cagtgagcga 5700
ggaagcggaa gagcgcccaa tacgcaaacc gcctctcccc gcgcgttggc cgattcatta 5760
atgcagctgg cagcagaggt ttcccgactg gaaagcgggc agtgagcgca acgcaattaa 5820
30 tgtgagttag ctactcatt aggcacccca ggctttacac tttatgcttc cggctcgtat 5880
gttgtgtgga attgtgagcg gataacaatt tcacacagga aacagctatg accatgatta 5940
35 cgccaagctt gcatgcctgc aggtcgactc tagaggatca agagcatttg aatcagaata 6000
tggagaacgg agcatgagca ttttcgaagt tttttagatg cactagaaca aagcgtgttg 6060
gcttcctctg agcccgtttt ccttatatac ccgcattctg cagccttaca gaatgttcta 6120
40 gaaggctcta gatgcattcg tttgaaaata ctcccgggtg gtgcaaagag acgcagacgg 6180
aaaatgtatc tgggtctctt tattgtgtac actacttttc catgtaccga atgtgagtcg 6240
45 ccctcctttt gcaacaagca gctcgaatgt tctagaaaaa ggtggaaaat agtataaata 6300
ccgttgaaaa taaataccga acaacatttg ctctaattgt gaaattagaa atcttcaaac 6360
tataatcatc tcaactggatc cccgggattg gccaaaggac ccaaagggtat gtttcgaatg 6420
50 atactaacat aacatagaac attttcagga ggacccttgg 6460

55 <210> 3

<211> 8330

<212> DNA

60

<213> Artificial Sequence

5 <220>

<223> Description of Artificial Sequence: plasmid DNA

10

<400> 3

gttgtcgtaa agagatgttt ttattttact ttacaccggg tcctctctct ctgccagcac 60
15 agctcagtgt tggctgtgtg ctcgggctcc tgccaccggc ggctcatct tcttcttctt 120
cttctctect gctctcgctt atcatttctt cattcattct tattcctttt catcatcaaa 180
ctagcatttc ttactttatt tatttttttc aattttcaat tttcagataa aaccaaacta 240
20 cttgggttac agccgtcaac agatccccgg gattggccaa aggacccaaa ggtatgtttc 300
gaatgatact aacataacat agaacatttt caggaggacc cttgcttgga gggtagcgga 360
25 tgactgctcc aaagaagaag cgtaagctca tgaacacgat taacatcgct aagaacgact 420
tctctgacat cgaactggct gctatcccgt tcaacactct ggctgaccat tacggtgagc 480
gttttagctcg cgaacagttg gcccttgagc atgagcttta cgagatgggt gaagcacgct 540
30 tccgcaagat gtttgagcgt caacttaaag ctggtgaggt tgccgataac gctgccgcca 600
agcctctcat cactacccta ctccctaaga tgattgcacg catcaacgac tggtttgagg 660
35 aagtgaagc taagcgcggc aagcgcccga cagccttcca gttcctgcaa gaaatcaagc 720
cggaagcgt agcgtacatc accattaaga ccactctggc ttgcctaacc agtgcgtgaca 780
atacaaccgt tcaggctgta gcaagcgcaa tcggctgggc cattgaggac gaggctcgct 840
40 tcggctcgat ccgtgacctt gaagctaagc acttcaagaa aaacgctgag gaacaactca 900
acaagcgct agggcacgct tacaagaaag catttatgca agttgtcgag gctgacatgc 960
45 tctctaaggg tctactcggt ggcgaggcgt ggtcttcgtg gcataaggaa gactctattc 1020
atgtaggagt acgctgcacg gagatgctca ttgagtcaac cggaatgggt agcttacacc 1080
gcaaaaatgc tggcgtagta ggtcaagact ctgagactat cgaactcgca cctgaatacg 1140
50 ctgaggctat cgcaaccgct gcagggtgcg tggtggcat ctctccgatg ttccaacctt 1200
gcgtagttcc tctaagcgc tggactggca ttactggtgg tggctattgg gctaacggtc 1260
55 gtcgtcctct ggcgctgggt cgtactcaca gtaagaaagc actgatgcgc tacgaagacg 1320
tttatatgcc tgagggtgtac aaagcgatta acattgcgca aaacaccgca tggaaaatca 1380
acaagaaagt cctagcggtc gccaacgtaa tcaccaagtg gaagcattgt ccggctgagg 1440

60

acatccctgc gattgagcgt gaagaactcc cgatgaaacc ggaagacatc gacatgaatc 1500
 ctgaggctct caccgcgtgg aaacgtgctg ccgctgctgt gtaccgcaag acaaggctcg 1560
 5 caagtctcgc cgtatcagcc ttgagttcat gcttgagcaa gccaataagt ttgctaacca 1620
 taaggccatc tggttccctt acaacatgga ctggcgcggt tcgtgtttac gctgtgtcaa 1680
 tgttcaacct gcaaggtaac gatatgacca aaggacgtct tacgctggcg aaaggtaaac 1740
 10 caatcggtaa ggaaggttac tactggctga aaatccacgg tgcaaactgt gcgggtgtcg 1800
 ataaggtttc gtttcctgag cgcacaaagt tcattgagga aaaccacgag aacatcatgg 1860
 15 cttgcgctaa gtctccactg gagaacactt ggtgggctga gcaagattct ccgttctgct 1920
 tccttgcggt ctgctttgag tacgctgggg tacagcacca cggcctgagc tataactgct 1980
 cccttcgcgt ggcgtttgac ggggtcttgc ctggcatcca gcaactctcc gcgatgctcc 2040
 20 gagatgaggt aggtggctgc gcgggttaact tgcttctag tgaaccggt caggacatct 2100
 acgggattgt tgctaagaaa gtcaacgaga ttctgcaagc agacgcaatc aatgggaccg 2160
 25 ataacgaagt agttaccgtg accgatgaga aactgggtga aatctctgag aaagtcaagc 2220
 tgggcactaa ggcactggct ggtcaatggc tggttacgg tgttactcgc agtgtgacta 2280
 agcgttcagt catgacgctg gcttacgggt ccaaagagtt cggcttccgt caacaagtgc 2340
 30 tggaagatac cattcagcca gctattgatt ccggcaaggg tctgatgttc actcagccga 2400
 atcaggctgc tggatacatg gctaagctga tttgggaatc cgtgagcgtg acggtggtag 2460
 35 ctgcggttga agcaatgaac tggcttaagt ctgctgctaa gctgctggct gctgaggtca 2520
 aagataagaa gactggagag attcttcgca agcgttgccg tgtgcattgg gtaactcctg 2580
 atggtttccc tgtgtggcag gaatacaaga agcctattca gacgcgcttg aacctgatgt 2640
 40 tcctcgggtca gttccgctta cagcctacca ttaacaccaa caaagatagc gagattgatg 2700
 cacacaaaca ggagtctggt atcgctccta actttgtaca cagccaagac ggtagccacc 2760
 45 ttcgtaagac tgtagtgtgg gcacacgaga agtacggaat cgaatctttt gcaactgattc 2820
 acgactcctt cgggtaccatt ccggctgacg ctgcgaacct gttcaaagca gtgcgcgaaa 2880
 ctatggttga cacatatgag tcttgatgat tactggctga tttctacgac cagttcgctg 2940
 50 accagttgca cgagtctcaa ttggacaaaa tgccagcact tccggctaaa ggtaacttga 3000
 acctccgtga catcttagag tcggacttcg cgttcgcgta agggcccact agtcggccgt 3060
 55 acgggccctt tcgtctcgcg cgtttcggtg atgacggtga aaacctctga cacatgcagc 3120
 tcccggagac ggtcacagct tgtctgtaag cggatgccgg gagcagacaa gcccgtcagg 3180
 gcgcgtcagc ggggtgtggc ggggtgctgg gctggcttaa ctatgcggca tcagagcaga 3240
 60

ttgtactgag agtgcacccat atgcggtgtg aaataccgca cagatgcgta aggagaaaat 3300
accgcatcag gcggccttaa gggcctcgtg atacgcctat ttttataggt taatgtcatg 3360
5 ataataatgg tttcttagac gtcaggtggc acttttcggg gaaatgtgcg cggaaccct 3420
atgtgtttat ttttctaaat acattcaaat atgtatccgc tcatgagaca ataaccctga 3480
taaagtcttc aataatattg aaaaaggaag agtatgagta ttcaacattt cgtgtgcgcc 3540
10 cttattccct tttttgcggc attttgcctt cctgtttttg ctcaccaga aacgctgggtg 3600
aaagtaaaag atgctgaaga tcagttgggt gcacgagtgg gttacatcga actggatctc 3660
15 aacagcggta agatccttga gagttttcgc cccgaagaac gttttccaat gatgagcact 3720
tttaaagttc tgctatgtgg cgcggtatta tcccgtattg acgcgggca agagcaactc 3780
ggtcgccgca tacactattc tcagaatgac ttggttgagt actcaccagt cacagaaaag 3840
20 catcttacgg atggcatgac agtaagagaa ttatgcagtg ctgccataac catgagtgat 3900
aacactgcgg ccaacttact tctgacaacg atcggaggac cgaaggagct aaccgctttt 3960
25 ttgcacaaca tgggggatca tgtaactcgc cttgatcgtt gggaaccgga gctgaatgaa 4020
gccataccaa acgacgagcg tgacaccacg atgcctgtag caatggcaac aacgttgccg 4080
aaactattaa ctggcgaact acttactcta gcttcccgcc aacaattaat agactggatg 4140
30 gagggcgata aagttgcagg accacttctg cgctcggccc ttccggctgg ctggtttatt 4200
gctgataaat ctggagccgg tgagcgtggg tctcgcggta tcattgcagc actggggcca 4260
35 gatggtaagc cctcccgtat cgtagtattc tacacgacgg ggagtcaggc aactatggat 4320
gaacgaaata gacagatcgc tgagataggt gcctcactga ttaagcattg gtaactgtca 4380
gaccaagttt actcatatat acttttagatt gatttaaaac ttcattttta atttaaaagg 4440
40 atctaggtga agatcctttt tgataatctc atgacaaaaa tcccttaacg tgagttttcg 4500
ttccactgag cgtcagaccc cgtagaaaag atcaaaggat cttcttgaga tccttttttt 4560
45 ctgcgcgtaa tctgctgctt gcaaacaaaa aaaccaccgc taccagcggg ggtttgtttg 4620
ccggatcaag agctaccaac tctttttccg aaggtaactg gcttcagcag agcgcagata 4680
ccaaatactg tccttctagt gtagccgtag ttaggccacc acttcaagaa ctctgtagca 4740
50 ccgcctacat acctcgtctt gctaactctg ttaccagtgg ctgctgccag tggcgataag 4800
tcgtgtetta ccgggttga ctcaagacga tagttaccgg ataaggcgca gcggtcgggc 4860
55 tgaacggggg gttcgtgcac acagcccagc ttggagcgaa cgacctacac cgaactgaga 4920
tacctacagc gtgagcattg agaaagcgcc acgcttcccg aaggagaaa ggcgacagg 4980
tatccggtaa gcggcagggt cggaacagga gagcgcacga gggagcttcc agggggaaac 5040
60

gcctggtatc tttatagtcc tgtcggggtt cgccacctct gacttgagcg tcgatttttg 5100
tgatgctcgt cagggggggcg gagcctatgg aaaaacgccg gcaacgcggc ctttttacgg 5160
5 ttcttgacct tttgctggcc ttttgcac atgttcttcc ctgcgttatc ccctgattct 5220
gtggataacc gtattaccgc ctttgagtga gctgataccg ctgcgccgag ccgaacgacc 5280
gagcgcagcg agtcagtga cgaggaagcg gaagagcgcc caatacgcaa accgcctctc 5340
10 cccgcgcgtt ggccgattca ttaatgcagc tggcacgaca ggtttcccga ctggaaaagcg 5400
ggcagtgagc gcaacgcaat taatgtgagt tagctcactc attaggcacc ccaggcttta 5460
15 cactttatgc ttccggctcg tatgttgtgt ggaattgtga gcggataaca atttcacaca 5520
ggaaaacagct atgaccatga ttacgccaaag ctgtaagttt aaacatgatc ttactaacta 5580
actattctca tttaaatttt cagagcttaa aaatggctga aatcactcac aacgatggat 5640
20 acgctaacaa cttggaaatg aaataagctt gcatgcctgc agagcaaaaa aatactgctt 5700
ttccttgcaa aattcgggtgc tttcttcaaa gagaaacttt tgaagtcggc gcgagcattt 5760
25 ccttctttga cttctctctt tccgccaaaa agcctagcat ttttattgat aatttgatta 5820
cacacactca gagttcttcg acatgataaa gtgtttcatt ggcaactcgc ctaacagtac 5880
atgacaaggg cggattatta tcgatcgata ttgaagacaa actccaaatg tgtgctcatt 5940
30 ttggagcccc gtgtggggca gctgctctca atatattact agggagacga ggagggggac 6000
cttatcgaa gtcgcatgag ccattcttcc tttttatgc actctcttca ctctctcaca 6060
35 cattaatcga ttcatagact cccatattcc ttgatgaagg tgtgggtttt tagctttttt 6120
tcccgatttg taaaaggaag aggctgacga tgttaggaaa aagagaacgg agccgaaaaa 6180
acatccgtag taagtcttcc ttttaagccg acacttttta gacagcattc gccgctagtt 6240
40 ttgaagttaa aattttaaaa aataaaaatt agtttcaatt ttttttaatt actaaatagg 6300
caaaagttaa ttcaagaact ctagaaaaac tagcttaatt catgggtact agaaaaattc 6360
45 ttgttttaaa tttaatattt atottaagat gtaattacga gaagcttttt tgaaaaattc 6420
caattaaaag aatttgccga tttagaataa agtcttcag aaatgagtaa aagctcaaat 6480
tagaagttag tttttaagg aaaaacacga aaaaagaaca ctatttatct tttctcccc 6540
50 gcgtaaaatt agttgttgtg ataatagtga tccgctgtct atttgcaact ggctcttcac 6600
accgtgcttc ctctcacttg acccaacagg aaaaaaaaac atcacgtctg agacggtgaa 6660
55 ttgccttata aagagcgctg tctctttcac ccagtaacaa aaaaaatttg gtttctttac 6720
tttatattta tgtaggtcac aaaaaaaaag tgatgcagtt ttgtgggtcg gttgtctcca 6780
caccacctcc gctccagca gcacacaatc atcttcgtgt gttctcgacg attccttgta 6840
60

5 tgccgcgggtc gtgaatgcac cacattcgac gcgcaactac acaccacact cactttcgggt 6900
 ggtattacta cacgtcatcg ttgttcgtag tctcccgtc tttcgtcccc actcaactcct 6960
 10 cattattccc cttggtgtat tgattttttt taaatggtag accactcctg acgtttctac 7020
 cttcttgttt tccgtccatt tagattttat ctggaaattt ttttaaaatt ttaggccaga 7080
 gagttctagt tcttgtttcta aaagtctagg tcagacatac attttctatt tctcatcaaa 7140
 15 aaaaaagttg ataaagaaaa ctggttattc agaaagagtg tgtctcgttg aaattgattc 7200
 aaaaaaaaaat tcccaccctt cgcttgtttc tcaaaatatg agatcaacgg attttttcct 7260
 tctcgattca attttttgtc gcgctctgtc tgccaaagtg tgtgtgtccg agcaaaagat 7320
 gagagaattt acaaacagaa atgaaaaaaaa gttggccaaa taatgaagtt ttatccgaga 7380
 20 ttgatgggaa agatattaat gttcttttac gtttggaggg gagagagaga tagatttttcg 7440
 catcaaactc cgccttttac atgtctttta gaatctaaaa tagatttttc tcatcatttt 7500
 taatagaaaa tcgagaaatt acagtaattt cgcaattttc ttgcaaaaaa tacacgaaat 7560
 25 ttgtgggtct cgccacgac tcggtcttag tgggtcattt ggtttaaaag tttataaaat 7620
 ttcaaattct agtgtttaat ttccgcataa ttggacctaa aatggggttt tgatcatcatt 7680
 ttcaacaaga aatcgtgaaa atcctgttgt ttcgcaattt tcttttcaaa aatacacgaa 7740
 30 atatatggta atttcccgaa atattgaggg tctcgccacg atttcagtca cagtggccag 7800
 gatttatcac gaaaaaagtt cgcctagtct cacatttccg gaaaaccgaa tctaaattag 7860
 35 ttttttgtca tcattttgaa caaaaaatcg agacatccct atagtttcgc aattttcgtc 7920
 gcttttctct ccaaaaatga cagtctagaa ttaaaattcg ctggaactgg gaccatgata 7980
 tcttttctcc ccgtttttca ttttattttt tattacactg gattgactaa aggtcaccac 8040
 40 caccgccagt gtgtgccata tcacacacac acacacacac aatgtcgaga ttttatgtgt 8100
 tatccctgct tgatttcgtt ccgttgtctc tctctctcta ttcattttt gagccgagaa 8160
 45 gctccagaga atggagcaca caggatcccg gcgcgcgatg tcgtcgggag atggcgccgc 8220
 ctgggaagcc gccgagagat atcaggaag atcgtctgat ttctctcgg atgccacctc 8280
 50 atctctcgag tttctccgcc tgttactccc tgccgaacct gatatttccc 8330

<210> 4

55 <211> 6470

<212> DNA

<213> Artificial Sequence

60

<220>

5 <223> Description of Artificial Sequence: plasmid DNA

<400> 4

10 aagcttgcac gcctgcaggg cttggctgac tctagacact tttcagctac ctagatacat 60
ggatatcccc gcctcccaat ccacccaccc agggaaaaag aagggtcgc cgaaaaatca 120
15 aagttatctc caggctcgcg catcccacgc agcgggtgac ttctctccac cacttttcat 180
tttaaccctc ggggtacggg attggccaaa ggacccaaag gtatgtttcg aatgatacta 240
acataacata gaacattttc aggaggaccc ttgcttgagg ggtaccgagc tcagaaaaaa 300
20 tgactgctcc aaagaagaag cgtaaggtag cggaatgaa cacgattaac atcgctaaga 360
acgactttct tgacatcgaa ctggctgcta tcccgttcaa cactctggct gaccattacg 420
25 gtgagcgttt agctcgcgaa cagttggccc ttgagcatga gtcttacgag atgggtgaag 480
cacgcttccg caagatgttt gagcgtcaac ttaaagctgg tgaggttgcg gataacgctg 540
ccgccaagcc tctcatcact accctactcc ctaagatgat tgcacgcac aacgactggc 600
30 ttgaggaagt gaaagctaag cgcggaagc gccgcacagc cttccagttc ctgcaagaaa 660
tcaagccgga agccgtagcg tacatcacca ttaagaccac tctggcttgc ctaaccagtg 720
35 ctgacaatac aaccgttcag gctgtagcaa gcgcaatcgg tcgggccatt gaggacgagg 780
ctcgtctcgg tcgtatccgt gaccttgaag ctaagcactt caagaaaaac gttgaggaac 840
aactcaacaa gcgcgtaggg cacgtctaca agaaagcatt tatgcaagtt gtcgaggctg 900
40 acatgctctc taagggtcta ctcggtggcg aggcgtggc ttcgtggcat aaggaagact 960
ctattcatgt aggagtacgc tgcacgaga tgctcattga gtcaaccgga atgggttagct 1020
45 tacaccgcca aaatgctggc gtagtaggtc aagactctga gactatcgaa ctgcacactg 1080
aatagctga ggctatcgca acccgtgcag gtgcgctggc tggcatctct ccgatgttcc 1140
aaccttgcgt agttcctcct aagccgtgga ctggcattac tgggtggggc tattgggcta 1200
50 acggctcgtc tcctctggcg ctggtgcgta ctacagtaa gaaagcactg atgcgctacg 1260
aagacgttta catgcctgag gtgtacaaag cgattaacat tgcgcaaac accgcatgga 1320
55 aaatcaacaa gaaagtccta gcggtcgcca acgtaatcac caagtggaag cattgtccgg 1380
tcgaggacat ccctgcgatt gagcgtgaag aactcccgat gaaaccgga gacatcgaca 1440
tgaatcctga ggctctcacc gcgtggaaac gtgctgccgc tgctgtgtac cgcaaggaca 1500
60

gggctcgcaa gtctcgccgt atcagccttg agttcatgct tgagcaagcc aataagtttg 1560
ctaaccataa ggccatctgg ttcccttaca acatggactg gcgcggtcgt gtttacgccg 1620
5 tgtcaatggt caaccgcaa ggtaacgata tgaccaaagg actgcttacg ctggcgaaag 1680
gtaaaccaat cggtaaggaa gggtactact ggctgaaaat ccacggtgca aactgtgcgg 1740
gtgtcgataa gggtccgttc cctgagcgca tcaagttcat tgaggaaaac caccgagaaca 1800
10 tcatggcttg cgctaagtct ccactggaga acacttgggt ggctgagcaa gattctccgt 1860
tctgcttctt tgcgttctgc tttgagtacg ctgggggtaca gcaccacggc ctgagctata 1920
15 actgtccctt tccgctggcg tttgacgggt cttgctctgg catccagcac ttctccgcga 1980
tgctccgaga tgaggtaggt ggtcgcgcgg ttaacttgct tcctagttag accgttcagg 2040
acatctacgg gattgttgct aagaaagtca acgagattct acaagcagac gcaatcaatg 2100
20 ggaccgataa cgaagtagtt accgtgaccg atgagaacac tggtgaaatc tctgagaaag 2160
tcaagctggg cactaaggca ctggctggtc aatggctggc tcacggtggt actcgtagtg 2220
25 tgactaagcg ttcagtcag acgctggctt acgggtccaa agagtccggc ttccgtcaac 2280
aagtgtgga agataccatt cagccagcta ttgattccgg caaggggccg atgttcactc 2340
agccgaatca ggctgtgga tacatggcta agctgatttg ggaatctgtg agcgtgacgg 2400
30 tggtagctgc gggtgaagca atgaactggc ttaagtctgc tgctaagctg ctggctgctg 2460
aggtcaaaga taagaagact ggagagattc ttgcgaagcg ttgcgctgtg cattgggtaa 2520
35 ctctgatgg tttccctgtg tggcaggaat acaagaagcc tattcagacg cgcttgaacc 2580
tgatgttctt cggtcagttc cgcttacagc ctaccattaa caccaacaaa gatagcgaga 2640
ttgatgcaca caaacaggag tctgggtatcg ctcttaactt tgtacacagc caagacggta 2700
40 gccaccttcg taagactgta gtgtgggcac acgagaagta cggaatcgaa tcttttgac 2760
tgattcacga ctcttcgggt accattccgg ctgacgctgc gaacctgttc aaagcagtg 2820
45 gcgaaactat ggttgacaca tatgagtctt gtgatgtact ggctgatttc tacgaccagt 2880
tcgctgacca gttgcacgag tctcaattgg acaaatgcc agcacttccg gctaaaggta 2940
acttgaacct ccgtgacatc ttagagtcgg acttcgcgtt cgcgtaagaa ttccaactga 3000
50 gcgcggtcgt ctaccattac caacttgtct ggtgtcaaaa ataatagggg ccgctgtcat 3060
cagagtaagt ttaaactgag ttctactaac taacgagtaa tatttaaatt ttcagcatct 3120
55 cgcgcccgtg cctctgactt ctaagtccaa ttactcttca acatccctac atgtcttttc 3180
tcctgtgctt cccacccctt atttttgtta ttatcaaaaa aacttcttct taatttcttt 3240
gttttttagc ttcttttaag tcacctctaa caatgaaatt gtgtagattc aaaaatagaa 3300
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

ttaattcgtataaaaaagtc gaaaaaaatt gtgctccctc ccccatataa taataattct 3360
 atcccaaaat ctacacaatg ttctgtgtac acttcttatg ttttttttac ttctgataaa 3420
 5 ttttttttga aacatcatag aaaaaaccgc acacaaaata ccttatcata tgttacgttt 3480
 cagtttatga cgcgaatttt tatttcttcg cacgtctggg cctctcatga cgtcaaatca 3540
 10 tgctcatcgt gaaaaagttt tggagtattt ttggaatttt tcaatcaagt gaaagtttat 3600
 gaaattaatt ttcttctttt tgctttttgg gggtttcccc tattgtttgt caagagtttc 3660
 gaggcggcg ttttcttgc taaaatcaca agtattgatg agcacgatgc aagaaagatc 3720
 15 ggaagaaggt ttgggtttga ggctcagtgg aaggtagta gaagttgata atttgaaagt 3780
 ggagtagtgt ctatggggtt ttgccttaa atgacagaat acattcccaa tataccaaac 3840
 ataactgttt cctactagtc ggccgtacgg gccctttcgt ctgcgcggtt tcggtgatga 3900
 20 cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgct tgtaagcgga 3960
 tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 4020
 25 gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 4080
 accgcacaga tgcgtaagga gaaaataccg catcaggcgg ccttaagggc ctctgatac 4140
 gcctattttt ataggttaat gtcataataa taatggtttc ttagacgtca ggtggcactt 4200
 30 ttccggggaaa tgtgcgcgga accctatttt gtttattttt cttaaatacat tcaaataatgt 4260
 atccgctcat gagacaataa cctgataaa tgcttcaata atattgaaaa aggaagagta 4320
 35 tgagtattca acatttccgt gtcgccctta ttcccttttt tgccgcattt tgccttctctg 4380
 tttttgctca cccagaaacg ctggtgaaag taaaagatgc tgaagatcag ttgggtgcac 4440
 40 gagtgggtta catcgaactg gatctcaaca gcggttaagat ccttgagagt tttcgccccg 4500
 aagaacgttt tccaatgatg agcactttta aagttctgct atgtggcgcg gtattatccc 4560
 gtattgacgc cgggcaagag caactcggtc gccgcataca ctattctcag aatgacttgg 4620
 45 ttgagtactc accagtcaca gaaaagcatc ttacggatgg catgacagta agagaattat 4680
 gcagtgcctgc cataaccatg agtgataaca ctgcggccaa cttacttctg acaacgatcg 4740
 50 gaggaccgaa ggagctaacc gcttttttgc acaacatggg ggatcatgta actcgccttg 4800
 atcggtggga accggagctg aatgaagcca taccaaacga cgagcgtgac accacgatgc 4860
 ctgtagcaat ggcaacaacg ttgcgcaaac tattaactgg cgaactactt actctagctt 4920
 55 cccggcaaca attaatagac tggatggagg cggataaagt tgcaggacca cttctgcgct 4980
 cggcccttcc ggctggctgg tttattgctg ataaatctgg agccggtgag cgtgggtctc 5040
 60 gcggtatcat tgcagcactg gggccagatg gtaagccctc ccgtatcgta gttatctaca 5100

cgacggggag tcaggcaact atggatgaac gaaatagaca gatcgctgag ataggtgcct 5160
 cactgattaa gcattggtaa ctgtcagacc aagtttactc atatatactt tagattgatt 5220
 5 taaaacttca tttttaattt aaaaggatct aggtgaagat cctttttgat aatctcatga 5280
 ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgta gaaaagatca 5340
 aaggatcttc ttgagatcct tttttctgc gcgtaatctg ctgcttgcaa acaaaaaaac 5400
 10 caccgctacc agcggtggtt tgtttgccg atcaagagct accaactctt tttccgaagg 5460
 taactggctt cagcagagcg cagataccaa atactgtcct tctagtgtag ccgtagttag 5520
 15 gccaccactt caagaactct gtagcaccgc ctacatacct cgtctgcta atcctgttac 5580
 cagtggctgc tgccagtggc gataagtcgt gtcttaccgg gttggactca agacgatagt 5640
 taccggataa ggcgcagcgg tcgggctgaa cgggggggtc gtgcacacag cccagcttgg 5700
 20 agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gcattgagaa agcgccacgc 5760
 ttcccgaagg gagaaaggcg gacaggtatc cggtaaagcg cagggtcggg acaggagagc 5820
 25 gcacgagggg gcttcaggcg ggaacgcct ggtatcttta tagtctgtc ggggttcgcc 5880
 acctctgact tgagcgtcga tttttgtgat gctcgtcagg ggggcggagc ctatggaaaa 5940
 acgccagcaa cggggccttt ttacggttcc tggccttttg ctggcctttt gctcacatgt 6000
 30 tctttctgc gttatcccc gattctgtgg ataaccgtat taccgccttt gaggtagctg 6060
 ataccgctcg ccgcagccga acgaccgagc gcagcagtc agtgagcgag gaagcggaag 6120
 35 agcgcccaat acgcaaaccg cctctccccg cgcgttgccc gattcattaa tgcagctggc 6180
 acgacagggt tcccgactgg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 6240
 40 tcaactatta ggcacccag gctttacact ttatgcttcc ggctcgatg ttgtgtggaa 6300
 ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaaagtgt 6360
 aagtttaaac atgatcttac taactaacta ttctcattta aattttcaga gcttaaaaaat 6420
 45 ggctgaaatc actcacaacg atggatacgc taacaacttg gaaatgaaat 6470

50 <210> 5

<211> 4689

<212> DNA

55 <213> Artificial Sequence

60 <220>

<223> Description of Artificial Sequence:plasmid DNA

5 <400> 5

aagcttgcac gcctgcaggc cttggctgcac tctagacact tttcagctac ctagatacat 60
ggatatcccc gcctcccaat ccaccacccc agggaaaaag aagggtcgc cgaaaaatca 120
aagttatctc caggctcgcg catcccacgc agcgggtgac ttctctccac cacttttcat 180
tttaaccctc ggggtacggg attggccaaa ggacccaaag gtatgtttcg aatgatacta 240
acataacata gaacattttc aggaggaccc ttgcttggag ggtaccgagc tcccgggatt 300
aatacgactc actataccgg tagaaaaaat gagtaaagga gaagaacttt tcaactggagt 360
tgtcccaatt cttgttgaat tagatggtga tgttaatggg cacaattttt ctgtcagtg 420
agaggggtgaa ggtgatgcaa catacggaaa acttaccctt aaattttatt gcactactgg 480
aaaactacct gttccatggg taagttaaata catatatata ctaactaacc ctgattattt 540
aaattttcag ccaacacttg tcaactactt ctgttatggt gttcaatgct tctcgagata 600
cccagatcat atgaaacggc atgacttttt caagagtgcc atgccgaag gttatgtaca 660
ggaaagaact atatttttca aagatgacgg gaactacaag acacgtaagt ttaaacagtt 720
cgggtactaac taaccataca tatttaaatt ttcaggtgct gaagtcaagt ttgaagggtga 780
tacccttggt aatagaatcg agttaaagg tattgatttt aaagaagatg gaaacattct 840
tggacacaaa ttggaatata actataactc acacaatgta tacatcatgg cagacaaaca 900
aaagaatgga atcaaagttg taagttaaata catgatttta ctaactaact aatctgattt 960
aaattttcag aacttcaaaa ttagacacaa cattgaagat ggaagcgttc aactagcaga 1020
ccattatcaa caaaatactc caattggcga tggccctgct cttttaccag acaaccatta 1080
cctgtccaca caatctgccc ttctgaaaga tcccaacgaa aagagagacc acatggctct 1140
tcttgagttt gtaacagctg ctgggattac acatggcatg gatgaactat acaaatagca 1200
ttcgtagaat tccaactgag cgccggctgc taccattacc aacttgtctg gtgtcaaaaa 1260
taataggggc cgctgtcatc agagtaagtt taaactgagt tctactaact aacgagtaat 1320
atttaaattt tcagcatctc gcgcccgtgc ctctgacttc taagtccaat tactcttcaa 1380
catccctaca tgctctttct cctgtgctc ccaccccta tttttgttat tatcaaaaaa 1440
acttcttctt aatttctttg ttttttagct tcttttaagt cacctctaac aatgaaattg 1500
tgtagattca aaaatagaat taattcgtaa taaaaagtcg aaaaaaattg tgctccctcc 1560
cccattaat aataattcta tccaaaatc tacacaatgt tctgtgtaca cttcttatgt 1620

60

tttttttact tctgataaat tttttttgaa acatcataga aaaaaccgca cacaaaatac 1680
cttatcatat gttacgtttc agtttatgac cgcaattttt atttcttcgc acgtctgggc 1740
5 ctctcatgac gtcaaatcat gctcatcgtg aaaaagtgtt ggagtatttt tggaattttt 1800
caatcaagtg aaagtttatg aaattaattt tcttgctttt gctttttggg ggtttccctt 1860
attgtttgtc aagagtttcg aggacggcgt ttttcttgct aaaatcacaa gtattgatga 1920
10 gcacgatgca agaaagatcg gaagaagggt tgggtttgag gctcagtgga aggtgagtag 1980
aagttgataa tttgaaagtg gagtagtgct tatgggggtt ttgccttaaa tgacagaata 2040
15 cattcccaat ataccaaaca taactgtttc ctactagtcg gccgtacggg cctttctgct 2100
tcgcgcgttt cggatgatgac ggtgaaaacc tctgacacat gcagctcccg gagacgggtca 2160
cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 2220
20 ttggcgggtg tcggggctgg cttaactatg cgcatcaga gcagattgta ctgagagtgc 2280
accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcggc 2340
25 cttaagggcc tctgatacgc cctattttta taggttaatg tcatgataat aatggtttct 2400
tagacgtcag gtggcacttt tcgggggaaat gtgcgcggaa cccctatttg tttatttttc 2460
taaatacatt caaatatgta tccgctcatg agacaataac cctgataaat gcttcaataa 2520
30 tattgaaaaa ggaagagtat gagtattcaa catttccgtg tcgcccttat tccctttttt 2580
gcggcatttt gccttctgtt ttttgctcac ccagaaacgc tgggtgaaagt aaaagatgct 2640
35 gaagatcagt tgggtgcacg agtgggttac atcgaactgg atctcaacag cggtaagatc 2700
cttgagagtt ttcgccccga agaacgtttt ccaatgatga gcacttttaa agttctgcta 2760
tgtggcgcgg tattatcccg tattgacgcc gggcaagagc aactcggctc ccgcatacac 2820
40 tattctcaga atgacttggg tgagtactca ccagtcacag aaaagcatct tacggatggc 2880
atgacagtaa gagaattatg cagtgtgcc ataaccatga gtgataacac tgcggccaac 2940
45 ttacttctga caacgatcgg aggaccgaag gagctaaccg cttttttgca caacatgggg 3000
gatcatgtaa ctgccttga tcgttgggaa ccggagctga atgaagccat accaaacgac 3060
gagcgtgaca ccacgatgcc tgtagcaatg gcaacaacgt tgcgcaaact attaactggc 3120
50 gaactactta ctctagcttc ccggcaacaa ttaatagact ggatggaggc ggataaagtt 3180
gcaggaccac ttctgcgctc ggcccttcgc gctggctggg ttattgctga taaatctgga 3240
55 gccggtgagc gtgggtctcg cggtatcatt gcagcactgg ggccagatgg taagccctcc 3300
cgtatcgtag ttatctacac gacggggagt caggcaacta tggatgaacg aaatagacag 3360
atcgctgaga taggtgcctc actgatgaag cattggtaac tgtcagacca agtttactca 3420
60

tatatacttt agattgattt aaaacttcat ttttaattta aaaggatcta ggtgaagatc 3480
ctttttgata atctcatgac caaaatccct taacgtgagt tttcgttcca ctgagcgtca 3540
5 gaccccgtag aaaagatcaa aggatcttct tgagatcctt tttttctgcg cgtaatctgc 3600
tgcttgcaaa caaaaaaacc accgctacca gcggtggttt gtttgccgga tcaagagcta 3660
ccaactcttt ttccgaaggt aactggcttc agcagagcgc agataccaaa tactgtcctt 3720
10 ctagtgtagc cgtagttagg ccaccacttc aagaactctg tagcaccgcc tacatacctc 3780
gctctgctaa tcctgttacc agtggtgct gccagtggcg ataagtcgtg tcttaccggg 3840
15 ttggactcaa gacgatagtt accggataag gcgcagcggc cgggctgaac gggggggttcg 3900
tgcacacagc ccagcttga gcgaacgacc tacaccgaac tgagatacct acagcgtgag 3960
cattgagaaa gcgccacgct tcccgaaggg agaaaggcgg acaggtatcc ggtaagcggc 4020
20 agggtcggaa caggagagcg cacgaggag cttccagggg gaaacgcctg gtatctttat 4080
agtcctgtcg ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg ctcgtcaggg 4140
25 gggcggagcc tatggaaaaa cgccagcaac gcggcctttt tacggttcct ggccctttgc 4200
tggccttttg ctcacatggt ctttctgcg ttatcccctg attctgtgga taaccgtatt 4260
accgcctttg agtgagctga taccgctcgc cgcagccgaa cgaccgagcg cagcgagtca 4320
30 gtgagcgagg aagcggaaga gcgccaata cgcaaaccgc ctctccccgc gcgttggccg 4380
attcattaat gcagctggca cgacagggtt cccgactgga aagcggggcag tgagcgcaac 4440
35 gcaattaatg tgagttagct cactcattag gcaccccagg ctttacactt tatgcttccg 4500
gctcgtatgt tgtgtggaat tgtgagcggg taacaatttc acacaggaaa cagctatgac 4560
catgattacg ccaagctgta agtttaaaca tgatcttact aactaactat tctcatttaa 4620
40 attttcagag cttaaaaatg gctgaaatca ctcacaacga tggatacgtt aacaacttgg 4680
aatgaaat 4689

45

<210> 6

<211> 5175

50

<212> DNA

<213> Artificial Sequence

55

<220>

<223> Description of Artificial Sequence: plasmid DNA

60

<400> 6

5 gatccccggcg cgcgatgtcg tcgggagatg gcgccgcctg ggaagccgcc gagagatatc 60
aggggaagatc gtctgatttc tcctcggatg ccacctcatc tctcgagttt ctccgcctgt 120
tactccctgc cgaacctgat atttcccggt gtcgtaaaga gatgttttta ttttacttta 180
10 caccgggtcc tctctctctg ccagcacagc tcagtgttggt ctgtgtgtctc gggctcctgc 240
caccggcggc ctcatcttct tcttcttctt ctctcctgct ctgccttate acttcttcat 300
15 tcattcttat tccttttcat catcaaaacta gcatttctta ctttatttat ttttttcaat 360
tttcaatttt cagataaaac caaactactt gggttacagc cgtcaacaga tccccgggat 420
tggccaaagg acccaaaggt atgtttcgaa tgatactaac ataacataga acattttcag 480
20 gaggaccctt gcttggagggt taccggtaga aaaaatgagt aaaggagaag aacttttcac 540
tggagttgtc ccaattcttg ttgaattaga tggatgattt aatgggcaca aattttctgt 600
25 cagtggagag ggtgaaggtg atgcaacata cggaaaactt acccttaaat ttatttgcac 660
tactggaaaa ctacctgttc catgggtaag tttaaacata tatatactaa ctaaccctga 720
ttatttaaatt tttcagccaa cacttgtcac tactttctgt tatgggtgttc aatgcttctc 780
30 gagataccca gatcatatga aacggcatga ctttttcaag agtgccatgc ccgaagggtta 840
tgtacaggaa agaactatat ttttcaaaga tgacgggaac tacaagacac gtaagtttaa 900
35 acagttcgggt actaactaac catacatatt taaattttca ggtgctgaag tcaagtttga 960
aggtgatacc cttgttaata gaatcgagtt aaaagggtatt gatttttaaag aagatggaaa 1020
cattcttggg cacaatttgg aatacaacta taactcacac aatgtataca tcatggcaga 1080
40 caaacaaaag aatggaatca aagttgtaag tttaaacttg gacttactaa ctaacggatt 1140
atatttaaatt tttcagaact tcaaaattag acacaacatt gaagatggaa gcgttcaact 1200
45 agcagaccat tatcaacaaa atactccaat tggcgatggc cctgtccttt taccagacaa 1260
ccattacctg tccacacaat ctgcccttcc gaaagatccc aacgaaaaga gagaccacat 1320
ggtccttctt gagtttgtaa cagctgctgg gattacacat ggcattggatg aactatacaa 1380
50 atagcattcg tagaattcca actgagcgcc ggctgctacc attaccaact tgtctggtgt 1440
caaaaataat aggggcccgt gtcacagag taagttttaa ctgagttcta ctaactaacg 1500
55 agtaatatat aaattttcag catctcgcgc ccgtgcctct gacttctaag tccaattact 1560
cttcaacatc cctacatgct ctttctccct gtgtcccccac cccctatttt tgttattatc 1620
aaaaaaactt cttcttaatt tctttgtttt ttagcttctt ttaagtcacc tctaacaatg 1680
60

aaattgtgta gattcaaaaa tagaattaat tcgtaataaa aagtcgaaaa aaattgtgct 1740
ccctccccc attaataata attctatccc aaaatctaca caatgttctg tgtacacttc 1800
5 ttatgttttt ttacttctg ataaattttt ttgaaacat catagaaaa accgcacaca 1860
aaatacctta tcatatgtta cgtttcagtt tatgaccgca atttttatctt ctgcgcacgt 1920
ctgggcctct catgacgtca aatcatgctc atcgtgaaaa agttttggag tatttttgga 1980
10 atttttcaat caagtgaag tttatgaaat taattttcct gcttttgctt tttgggggtt 2040
tcccctattg tttgtcaaga gtttcgagga cggcggtttt cttgctaaaa tcacaagtat 2100
15 tgatgagcac gatgcaagaa agatcggaag aaggtttggg tttgaggctc agtggaaggt 2160
gagtagaagt tgataatttg aaagtggagt agtgtctatg gggtttttgc cttaaattgac 2220
agaatacatt cccaatatac caaacataac tgtttcttac tagtcggccg tacgggcccg 2280
20 gtaccagct tttgttcct ttagtgaggg ttaattgcgc gcttgccgta atcatggtca 2340
tagctgtttc ctgtgtgaaa ttgttatccg ctcaaatc cacacaacat acgagccgga 2400
25 agcataaagt gtaaagcctg gggcgctaa tgagtgcct aactcacatt aattgcgttg 2460
cgctcactgc ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc 2520
caacgcgcgg ggagaggcgg tttgcgtatt gggcgctctt ccgcttctc gctcactgac 2580
30 tcgctgcgct cggtcgttcg gctgcggcga gcggtatcag ctactcaaa ggccgtaata 2640
cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaa aggccagcaa 2700
35 aaggccagga accgtaaaaa ggccgcgttg ctggcgttt tccataggct ccgccccct 2760
gacgagcatc acaaaaatcg acgtcaagt cagaggtggc gaaacccgac aggactataa 2820
agataccagg cgtttcccc tggaagctcc ctctgcgct ctctgttcc gacctgccg 2880
40 cttaccgat acctgtcgc ctttctccct tcgggaagcg tggcgcttct tcatagctca 2940
cgctgtaggt atctcagttc ggtgtaggtc gttegtcca agctgggctg tgtgcacgaa 3000
45 ccccccgttc agccgaccg ctgcgcctta tccgtaact atcgtcttga gtccaacccg 3060
gtaagacacg acttatcgcc actggcagca gccactggta acaggattag cagagcgagg 3120
tatgtaggcg gtgtacaga gttcttgaag tggcgccta actacggcta cactagaagg 3180
50 acagtatttg gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc 3240
tcttgatccg gcaaacaaac caccgctggt agcggtggt tttttgttg caagcagcag 3300
55 attacgcgca gaaaaaagg atctcaagaa gatccttga tcttttctac ggggtctgac 3360
gctcagtgga acgaaaactc acgttaaggg attttggta tgagattatc aaaaaggatc 3420
ttcacctaga tcttttaaa ttaaaaatga agttttaaat caatctaaag tatatatgag 3480
60

taaacttggt ctgacagtta ccaatgctta atcagtgagg cacctatctc agcgatctgt 3540
 ctatttcgtt catccatagt tgcctgactc cccgtcgtgt agataactac gatacgggag 3600
 5 ggcttaccat ctggccccag tgctgcaatg ataccgagag acccaagctc accggctcca 3660
 gatttatcag caataaacca gccagccgga agggccgagc gcagaagtgg tcttgcaact 3720
 ttatccgctt ccatccagtc tattaattgt tgccgggaag ctagagtaag tagttcgcca 3780
 10 gttaatagtt tgcgcaacgt tgttgccatt gctacaggca tctgggtgtc acgctcgtcg 3840
 tttggtatgg cttcattcag ctccggttcc caacgatcaa ggcgagttac atgatcccc 3900
 15 atgttgtgca aaaaagcggg tagctccttc ggtcctccga tcttgtcag aagtaagttg 3960
 gccgcagtgt tatcactcat gggtatggca gcactgcata attctcttac tgtcatgcca 4020
 tccgtaagat gcttttctgt gactgggtgag tactcaacca agtcattctg agaatagtgt 4080
 20 atgcggcgac cgagttgctc ttgcccggcg tcaatacggg ataataccgc gccacatagc 4140
 agaactttaa aagtgtcat cattggaaaa cgttcttcgg ggcgaaaact ctcaaggatc 4200
 25 ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg cacccaactg atcttcagca 4260
 tcttttactt tcaccagcgt ttctgggtga gcaaaaacag gaaggcaaaa tgccgcaaaa 4320
 aagggaataa gggcgacacg gaaatgttga atactcatac tcttcctttt tcaatattat 4380
 30 tgaagcattt atcagggtta ttgtctcatg agcggatata tatttgaatg tatttagaaa 4440
 aataaacaaa taggggttcc gcgcacattt ccccgaaaag tgccacctaa attgtaagcg 4500
 35 ttaatatattt gttaaaattc gcgttaaatt tttgttaaatt cagctcattt tttaaccaat 4560
 aggccgaaat cggcaaaatc ccttataaat caaaagaata gaccgagata ggggttgagt 4620
 ttgttccagt ttggaacaag agtccactat taaagaacgt ggactccaac gtcaaagggc 4680
 40 gaaaaaccgt ctatcagggc gatggccac tacgtgaacc atcaccctaa tcaagttttt 4740
 tggggtcgag gtgccgtaaa gcactaaatc ggaaccctaa agggagcccc cgatttagag 4800
 45 cttgacgggg aaagccggcg aacgtggcga gaaaggaagg gaagaaagcg aaaggagcgg 4860
 gcgctagggc gctggcaagt gtagcgggtc cgctgcgctg aaccaccaca cccgccgcgc 4920
 ttaatgcgcc gctacagggc gcgtccatt cgccattcag gctgcgcaac tgttgggaag 4980
 50 ggcgatcggg gcgggcctct tcgctattac gccagctggc gaaaggggga tgtgctgcaa 5040
 ggcgattaag ttgggtaacg ccagggtttt ccagtcacg acgttgtaaa acgacggcca 5100
 55 gtgagcgcgc gtaatacgac tcactatagg gcgaattgga gctccaccgc ggtggcggcc 5160
 gctctagaac tagtg 5175

<210> 7

<211> 12482

5 <212> DNA

<213> Artificial Sequence

10

<220>

<223> Description of Artificial Sequence: plasmid DNA

15

<400> 7

20 gatcctccaa aatcgtcttc cgctctgaaa aacgaaagtg gacctttgac atccgaaaaa 60
atgggcgaaa aaatgaaatt gagctttttg ggtcgaaaaa aatgttttta gaatgctgag 120
aacacgttaa acacgaagat catatattatt ttgagaccg gatgctctga aaatgtctga 180
25 catagattta aaaaagcata tatatatattt tcattttcaa cgtgaaagtt ttgtgcaact 240
ttatagaatc tcctattggc acattgtttt ttatttaact gaggcagttt ttgaacacct 300
ttttgaaact ttgaatctct ttgaagtata ctgtcgaaaa gactgacttg agcggttcgaa 360
30 atgccagaag aaaactatat ttgaatctcg cgctaaattg agaaatgcaa ccgcgctcca 420
ctggacaatt ggaaaaaaaaa tttattcgga ggcgacaacg gtattttcga aattgatttt 480
35 ctgtgtattt tctcattttt tataaattct tctttgattt atcgttcgtt tgtgagaaat 540
ttaattgtat tcaaactttt ttatagtaag ataccggtgg taccgctagc cgtacgaacc 600
cgggattggc caaaggaccc aaaggatatgt ttcgaatgat actaacataa catagaacat 660
40 tttcaggagg acccttgctt ggaggggtacc ggatgactgc tccaaagaag aagcgtaagc 720
tcatgaacac gattaacatc gctaagaacg acttctctga catcgaactg gctgctatcc 780
45 cgttcaacac tctggctgac cattacggtg agcgtttagc tcgcgaacag ttggcccttg 840
agcatgagtc ttacgagatg ggtgaagcac gcttccgcaa gatgtttgag cgtcaactta 900
aagctggtga ggttgcggt aacgctgccg ccaagcctct catcactacc ctactcccta 960
50 agatgattgc acgcatcaac gactggtttg aggaagtga agctaagcgc ggcaagcgcc 1020
cgacagcctt ccagttcctg caagaaatca agccggaagc cgtagcgtag atcaccatta 1080
55 agaccactct ggcttgcccta accagtgtg acaatacaac cgttcaggct gtagcaagcg 1140
caatcggtcg ggccattgag gacgaggtc gcttcggtcg tatccgtgac cttgaagcta 1200
agcatttcaa gaaaaacggt gaggaacaac tcaacaagcg cgtagggcac gtctacaaga 1260
60

aagcatttat gcaagttgtc gaggctgaca tgctctctaa ggggtctactc ggtggcgagg 1320
cgtgggtcttc gtggcataag gaagactcta ttcattgtagg agtacgctgc atcgagatgc 1380
5 tcattgagtc aaccggaatg gttagcttac accgccaaaa tgctggcgta gtaggtcaag 1440
actctgagac tatcgaactc gcacctgaat acgctgaggc tatcgcaacc cgtgcagggtg 1500
cgctggctgg catctctccg atgttccaac cttgcgtagt tcctcctaag ccgtggactg 1560
10 gcattactgg tgggtggctat tgggctaacg gtcgtcgtcc tctggcgctg gtgcgtactc 1620
acagtaagaa agcactgatg cgctacgaag acgtttacat gcctgaggtg tacaaaagcga 1680
15 ttaacattgc gcaaaacacc gcatggaaaa tcaacaagaa agtcctagcg gtcgccaacg 1740
taatcaccaa gtggaagcat tgtccggtcg aggacatccc tgcgattgag cgtgaagaac 1800
tcccgatgaa accggaagac atcgacatga atcctgaggc tctcaccgcg tggaaacgtg 1860
20 ctgccgctgc tgtgtaccgc aagacaaggc tcgcaagtct cgccgtatca gccttgagtt 1920
catgcttgag caagccaata agtttgctaa ccataaggcc atctggttcc cttacaacat 1980
25 ggactggcgc ggttcgtgtt tacgctgtgt caatgttcaa cccgcaaggt aacgatatga 2040
ccaaaggacg tcttacgctg gcgaaaggta aaccaatcgg taaggaaggt tactactggc 2100
tgaaaatcca cggtgcaaac tgtgcgggtg tcgataaggt ttcgtttcct gagcgcatca 2160
30 agttcattga ggaaaaccac gagaacatca tggcttgccg taagtctcca ctggagaaca 2220
cttgggtggg tgagcaagat tctccgttct gcttccttgc gttctgcttt gactacgctg 2280
35 gggtagacga ccacggcctg agctataact gctcccttcc gctggcggtt gacgggtctt 2340
gctctggcat ccagcacttc tccgcgatgc tccgagatga ggtaggtggg cgcgcgggta 2400
acttgcttcc tagtgaaacc gttcaggaca tctacgggat tgttgctaag aaagtcaacg 2460
40 agattctgca agcagacgca atcaatggga ccgataacga agtagttacc gtgaccgatg 2520
agaacactgg tgaaatctct gagaaagtca agctgggcac taaggcactg gctgggtcaat 2580
45 ggctggctta cggtgttact cgcagtgtga ctaagcgttc agtcatgacg ctggcttacg 2640
gggccaaaaga gttcggcttc cgtcaacaag tgctggaaga taccattcag ccagctattg 2700
attccggcaa gggctctgatg ttcactcagc cgaatcaggc tgctggatac atggctaagc 2760
50 tgatttgga atccgtgagc gtgacgggtg tagctgcggg tgaagcaatg aactggctta 2820
agtctgctgc taagctgctg gctgctgagg tcaaagataa gaagactgga gagattcttc 2880
55 gcaagcggtg cgctgtgcat tgggtaactc ctgatgggtt ccctgtgtgg caggaataca 2940
agaagcctat tcagacgcgc ttgaacctga tgttcctcgg tcagttccgc ttacagccta 3000
ccattaacac caacaaagat agcgagattg atgcacacaa acaggagtct ggtatcgctc 3060
60

ctaactttgt acacagccaa gacggtagcc accttcgtaa gactgtagtg tgggcacacg 3120
agaagtacgg aatcgaatct ttgactga ttcacgactc cttcggtacc attccggctg 3180
5 acgctgcgaa cctgttcaaa gcagtgcgcg aaactatggt tgacacatat gagtcttgtg 3240
atgtactggc tgattttctac gaccagtctg ctgaccagt gcacgagtct caattggaca 3300
aaatgccagc acttccggct aaaggttaact tgaacctccg tgacatctta ggtcggact 3360
10 tcgcttcgc gtaagggccc tcgtcgagtc ggtcacaatc acctgaaact ccaaaggcag 3420
ccagtgagga acgtgaagaa gaagaaaaag agtcatctga acaggtttga ttttctttct 3480
15 ggtcaaaaag atgaaattat tgattttcag ccagatactc ccaaaactag cagcgagaag 3540
tctgcaagtc gttcacagtc gccagagaa tcgctgggaag tgagccaaga ggtatgtttt 3600
tcaaaaatca ataactgac ataattttta ttgtttgtg aatttaagaa aataatattc 3660
20 gaaaattcct ctgaattatc aagattgcag tattaatttc gagaaaaatt gagatattca 3720
tagagctatt gtaaattttc ttgatttcag actgaaactt cggaaaatca agagaaaatc 3780
25 aaagaaaagg atgacgggga tgatcagcct ggcacaccga acagctatag aagccgggaa 3840
acttcaccag ctccaaaaag gtccaaggag accaggtttg tcaaaagctt cctgcgatta 3900
attctcattt caatttttca gagaatcaga gtctctgaa aaatccccg ttcgttcaag 3960
30 atctcccaga aggtcttcag cacgttcccc gtcacgatct cctagacggc gccagaaaag 4020
aagctcagaa agaaagcaat ccgaagagcc agcaccgcta ccagagaaaa agaagaaaga 4080
35 gccgtggat attctacgaa caagaaccgg aggagcatat attccacccg ccaaacttcg 4140
acttatgcaa caacagatta gtgataagca aagtgaacag tatcagagaa tgaattggga 4200
aagaatgaag aaaaagattc acggattggt taacagagtc aacgcgaaga atcttgttca 4260
40 aattgtcaga gaacttcttc aagagaatgt gattcgttca aagtgaagta gaaaatcgaa 4320
ggaaaaggaa agaattaatt taatttttca ggggacttct ctgccgtgac attattcaag 4380
45 ctcaggcttt ctcaccagga ttctctaacg tctatgcagc tttggcggca gttatcaact 4440
cgaaattccc tcatgtcggg gaacttcttc tccgtcgtct gattgtacag ttcaaaagaa 4500
gtttccgtag aaatgacaga ggcgtcacgg tgaacgtgat caaattcatc gcacatttga 4560
50 ttaatcaaca agttgctcac gaagttcttg cgctggaaat catgattctg atgcttgaag 4620
aaccaactga tgattcagtt gaagtcgcca ttgcgttctt gaaagagtgt ggagcaaacg 4680
55 ttctggagat tgctccagca gctcttaaca gtgtctacga ccgtcttcgt gcaattctca 4740
tggaaactga aagatcggaa aatgcactgg atcgacgtat tcagtatatg attgagactg 4800
caatgcagat tcgaaaggac aaatttgctg taaggtagaa tatataaata gtttattaga 4860
60

aaaaaataaa ttagaataat ttaaattcct actagccaat caggcgacct ttttgcgcat 4920
agttctatta ttgaaaaatt tggagaattt ctcatattct cgctcgaaa tctggaattc 4980
5 gacgagatct tctggcttct gtgcagctgc atcgctttgt gctcccttct tcgcttgctc 5040
tctgtgtaca ccaagaacct tgttgagttc atcaactgaa tctgtgactg gcttgttgct 5100
cactggatgc actagacgac tgattctcga gaaatcagat tgagttgca ttagggtgac 5160
10 ctagaaattg ggaataatac gaacttttga aaatattcag gaggattaaa aaaattattc 5220
tcgacaatcc tacaaattta cttattgcac catgttgctc caacattttt cattaaaagt 5280
15 taatgaaaaa atgtagaaaa tcggaaattg gcaattttca gaccattttt aagcattttc 5340
aaaaaaaaat tgcagctgaa ataaatgtca ttttcagata aatcgagcga ttttctgttg 5400
tctgacacta gtttttagtt ttaaaaaatg ttggaagaac atggtgcaat aggtaatttc 5460
20 atagaatttc catgtgtttt ttttcaatta accaattatc caaatcttcc aaactcacat 5520
tttgcggagc tgggctatca agaactctgt gcagttttat aagacgagca tctctgatat 5580
25 cactgaaaat taatttttaa tcaaaacttg aatatcaact aaaccactt attaatttc 5640
tcgatcttct gtcgttcggt acgatgacgg tgaagaagcc aattgtagta gttgatttgg 5700
ttcaagtcc ttcggtgttg tacgtcagtg tctgcaatg ctatttagtt ataacttagg 5760
30 cctaagattc aatttaataga agtgattaaa tttgttctct gaacctctta agatgatctt 5820
ttggattaga aacatataag acagggtttac ctatctatta aaaaacagat caaaatagat 5880
35 acgaccaaat cggataatcc atgcctacct ggcacttagg aacgtgttct tagaagattt 5940
cttacgtaat cgtatgaaga aataacaatt tgatcgttgg ccagcaaaaa tagggtttta 6000
agtgggatag tgtttttatt agctaaccgg aaaattttat agttttttt tgcaagaaac 6060
40 cactgaaaac ccctaattg tatacathtt ttggagcagc ttctggtctt tttgagcaat 6120
aaaattcgat aaaacagaat ttaagtgtaa attgttcaca tttagtttct attttatcaa 6180
45 attttgttgc tcaaaaacat tcgaagctgc tctaaaaaaa tgcattaaaa aaggggtttt 6240
cagtgggttt tcaattaaa aaagctaatt ttaactaaaa atccatcata tttccaactt 6300
tgtcacaca ataaaatgct ggtcaaaatg tgctcgaaaa aatgtttttt ttttaattt 6360
50 ttataattta aaaatagttt tcttctgctg ggacacatac atttttgggc gtaaattttc 6420
agttcaaatt tccattttta caaccataat cataaagcta cgtctgatct ctctcgact 6480
55 tacctgcgcc tgattcgaaa gaacaaccgt agccaaaaga acaagaagaa caagcacgta 6540
gttgtggtag tggacgttca tcacgcaata ctgaccaatg gtcgtggggc ctacttttc 6600
gtactattga gagaggggag actgaagatg gcaattgagg acagtgtctt cgacgcacgc 6660
60

atgcatccat aagcataatc caggagggat ggagagaaaa atcttgtttc taagcccctc 6720
cctttgtaat acatacacat atctaatacc gaagaatggc taattgaatg gacgtcagct 6780
5 gttgctgtag ttgccaaggc atcatcgatg aaataactga aagaaagaat taaataatta 6840
ttgcaggcgt atccggcggt cattgaagac ttggacttga ttgaggagga ggatcagatc 6900
atccatacac ttaatttggg ggatgcggtt gatccggaaa atgggcttag taagtgactg 6960
10 accacacgcg gggggcatta atttaataaa ttgaattcca tttcagatgt gttcaaaacta 7020
gatccagaat tcgaaaagaa cgaggagggt tatgaggaga tccgtaagga aatcattgga 7080
15 aacgccgata tttcggatga ggatggtggc gacgagttgg atgatgaaga agagggtagt 7140
gatgtggaag aggctccgaa gaagactaca gagattattg ataatactga tcagaattga 7200
ctgctttcag aaggatttca ttttgagttt tgggccggca aatctgtaag ttgccggttg 7260
20 ccgaaaattt gctgaatttg ccggaaaaaa aaattccgga atttatttaa aaactttttg 7320
taaaaattaa attaaatttg caacttttca gagaagtcta cctgacaatg caatcatctt 7380
25 tggactacca agaagctgct caciaattgc tgaaaatgaa gattccagac agcatgcagg 7440
tcagcgatgt tgcaaagaaa aattttcgac caaaaaaacc aaccaatcat aaaatttaaa 7500
aaaaaactcc gtttttttct ttttttttat acgagaaaaa ccaaaaaaat gtatttttgc 7560
30 caaattctaa aatactatcc ccgaaatttt caatattttc tctttcagaa cgaactctgc 7620
gcgatgcttg tcgattgttg tgctcaacag cgtacctacg agcgattcta cggaatgctc 7680
35 atcgaacgtt tctgccgact tcgcctcgaa taccagcaat actttgaaaa gctctgccag 7740
gacacgtatt ccacgattca ccgaattgac atcacaaaaac tgcggaattt ggctcgctt 7800
attgctcatt tgctctcgac ggatgctatt gactggaaga ttttggccga tatgaaaatg 7860
40 accgaagagg acacaaactt ttctggcaga atctatatta aatatatatt taatgaactt 7920
gtggaggcga tgggaatggt taaacttcat tcgagagtta ctgatccgtg agtttcctag 7980
45 agagagttgt tttcgtattc aattttccct attttcagaa ctttggctca ttgctttgtt 8040
ggattattcc cacgaactaa tccgaacagc gcacgatttt cgatcaactt cttcacaatg 8100
attggattgg gtggtttgac gttggaactt cgtgaatggc tggcaaaggg tctcaagaag 8160
50 aagaagggaa tgctggatca gttgaaggcc gaatcaagct cagattcatc gtcgtcttcg 8220
gattcgtcag actcgtctga ttcttcggat tctgacgatt catccgactc gtcttcagat 8280
55 tcctcatctt cttcagaatc agagccagaa ccaccgaaga aaaagaagaa gaagaacagt 8340
gaagagagtt ccaaaaagaa ggaaaaagag aatattggtc gacgggatcg tggagacaag 8400
agagctgaac gtcatcgtga tcaaagtgtg gagaacaagg acaaggatcg tcgacgtcgc 8460
60

caggattctg acgaaaatcg tcggccagaa cgaggagatg accgcaagga tcggagtaaa 8520
gatcgtcgtc gtcaagactc ggatgatgag gatcggaaag gtcgtgaacg tcgggaagat 8580
5 tcaggggaaa gacgtcgcgg agatcgggat cgacgtgatc gaaacaagga tcaggaggat 8640
caccgtgaag atcgccgtga ccgaagcaag gatcgtgagg atcgacgtga tcgccgtcgt 8700
catgactctg atgatgatcg taaaactcgt cgggtagaa gtgaagagcg aggaggacgt 8760
10 cgtcgtgaag tggaatcgga tgatcgacgc cgacgtcgtt gaattttcaa attttaaata 8820
ctgaatattt gttttttttc ctattattta tttattctct ttgtgttttt tttcttgctt 8880
15 tctaaaaaat taattcaatc caaatctaaa catgagcggg tttttttctc tttcgtctc 8940
ccaattcgta ttcgctcct ctcactgaa cacaatgtgc aagtttattt atcttctcgc 9000
tttcatttca ttaggacgtg gggggaattg gtggaagggg gaaacacaca aaaggatgat 9060
20 ggaaatgaaa taaggacaca caatatgcaa caacattcaa ttcagaaata tggaggaagg 9120
tttaaaagaa aacataaaaa tatatagagg aggaaggaaa actagtaaaa aataagcaaa 9180
25 gaaattagggc gaacgatgag aattgtcctc gcttggcaaa tgcgaatccg tatggagagg 9240
cacgtttggc gaaggcaaat gttcggtagt gagatctgta aaaattttta agttgaaatt 9300
tggtgttgct cttttacaaa attttccgat tttcgttga aattacgggtg ccaggctcgc 9360
30 acacgtcttc caatttttca aattcaaaag agcctttaat gggctgtagt tgctaatttc 9420
tcgtttttga aaatttttct tccgtttaat cgaaatttga tgtattttat ttatgatttt 9480
35 caataaattt caaagaaact ggtgaaaact cggaaaattg tgaactacag taatccaatc 9540
cttaaaggcg cacacctttt aaatgtccgc cccaatacga tattttttta agattcgcta 9600
gagcgccgc caccgcggtg gagctccaat tcgccctata gtgagtcgta ttacaattca 9660
40 ctggcgcgtc ttttacaacg tcgtgactgg gaaaaccctg gcgttaccca acttaatcgc 9720
cttgacgac atccccctt cgccagctgg cgtaatagcg aagaggcccg caccgatcgc 9780
45 ccttcccaac agttgcgtag cctgaatggc gaatgggacg cgccctgtag cggcgcatta 9840
agcgcgccgg gtgtggtggt tacgcgcagc gtgaccgcta cacttgccag cgcctagcg 9900
cccgtcctt tcgctttctt ccttctttt ctcgccacgt tcgccggctt tccccgtaa 9960
50 gctctaaatc gggggctccc tttagggttc cgatttagtg ctttacggca cctcgacccc 10020
aaaaaacttg attagggatg tggttcacgt agtgggcat cgccctgata gacgggtttt 10080
55 cgccctttga cgttgagtc cacgttcttt aatagtggac tcttgttcca aactggaaca 10140
aactcaacc ctatctcgtt ctattctttt gatttataag ggattttgcc gatttcggcc 10200
tattggttaa aaaatgagct gatttaacaa aaatttaacg cgaattttta caaaatatta 10260
60

acgttttaciaa tttcaggtgg cactttttcgg ggaaatgtgc gcggaacccc tatttgttta 10320
ttttttctaaa tacattcaaa tatgtatccg ctcatgagac aataaccctg ataaatgctt 10380
5 caataatatt gaaaaaggaa gagtatgagt attcaacatt tccgtgtcgc cttattccc 10440
ttttttgcgg cattttgcct tccgtgtttt gctcaccag aaacgctggt gaaagtaaaa 10500
gatgctgaag atcagttggg tgcacgagtg ggttacatcg aactggatct caacagcggg 10560
10 aagatccttg agagttttcg cccgaagaa cgtttttcaa tgatgagcac ttttaaagtt 10620
ctgctatgtg gcgcggtatt atcccgtatt gacgccgggc aagagcaact cggtcgccgc 10680
15 atacactatt ctcaaatga cttgggtgag tactcaccag tcacagaaaa gcattcttacg 10740
gatggcatga cagtaagaga attatgcagt gctgccataa gcattgagtga taacactgcg 10800
gccaacttac ttctgacaac gatcggagga ccgaaggagc taaccgcttt ttttcacaac 10860
20 atgggggatc atgtaactcg cttgatcgt tgggaaccgg agctgaatga agccatacca 10920
aacgacgagc gtgacaccac gatgcctgta gcaatggcaa caacgttgcg caaactatta 10980
25 actggcgaac tacttactct agcttcccg caacaattaa tagactggat ggaggcggat 11040
aaagttgcag gaccacttct gcgctcgcc cttccggctg gctggtttat tgctgataaa 11100
tctggagccg gtgagcgtgg gtctcgcggt atcattgcag cactggggcc agatggtaag 11160
30 cctcccgtg tctagttat ctacacgacg ggcagtcagg caactatgga tgaacgaaat 11220
agacagatcg ctgagatagg tgcctcactg attaagcatt ggtaactgtc agaccaagtt 11280
35 tactcatata tactttagat tgatttaaaa cttcattttt aatttaaaag gatctagggtg 11340
aagatccttt ttgataatct catgacaaaa atcccttaac gtgagttttt gttccactga 11400
gcgtcagacc ccgtagaaaa gatcaaagga tcttcttgag atcctttttt tctgcgcgta 11460
40 atctgctgct tgcaaacaaa aaaaccaccg ctaccagcgg tggtttgttt gccggatcaa 11520
gagctaccaa ctctttttcc gaaggtaact ggcttcagca gagcgcagat accaaatact 11580
45 gtccttctag tgtagccgta gtaggccac cacttcaaga actctgtagc accgcctaca 11640
tacctcgctc tgtaatcct gttaccagtg gctgctgcca gtggcgataa gtcgtgtctt 11700
accgggttgg actcaagacg atagttaccg gataaggcgc agcggtcggg ctgaacgggg 11760
50 ggttcgtgca cacagcccag cttggagcga acgacctaca ccgaactgag atacctacag 11820
cgtgagcatt gagaaagcgc cacgcttccc gaaggagaa aggcggacag gtatccggta 11880
55 agcggcaggg tcggaacagg agagcgcacg agggagcttc caggggggaa cgcctgggtat 11940
ctttatagtc ctgtcgggtt tgcacacctc tgacttgagc gtcgattttt gtgatgctcg 12000
60 tcaggggggc cgagcctatg gaaaaacgcc agcaacgcgg ccttttttacg gttcctggcc 12060

ttttgctggc cttttgctca catgttcttt cctgcggttat cccctgattc tgtggataac 12120
cgtattaccg cctttgagtg agctgatacc gctcggccga gccgaacgac cgagcgcagc 12180
5 gagtcagtga gcgaggaagc ggaagagcgc ccaatacgca aaccgcctct ccccgcgcg 12240
tggccgattc attaatgcag ctggcacgac aggtttcccg actggaaagc gggcagtga 12300
cgcaacgcaa ttaatgtgag ttacctcact cattagggcac cccaggcttt acactttatg 12360
10 cttccggctc ctatgttg 12420
tatgaccatg attacgcaa gctcggaatt aacctcact aaagggaaca aaagctggg 12480
15 gg 12482

<210> 8

<211> 7209

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: plasmid DNA

<400> 8

gatccgtcga cagatctccc tatagtgagt cgtattactg cagccaagct aattccgggc 60
gaattttctta tgatttatga tttttattat taaataagtt ataaaaaaaa taagtgtata 120
40 caaatttttaa agtgactctt aggtttttaa acgaaaattc ttgttcttga gtaactcttt 180
cctgtaggtc aggttgcttt ctgaggata gcatgaggtc gctcttattg accacacctc 240
45 taccggcatg caagcttggc gtaatcatgg tcatagctgt ttctgtgtg aaattgttat 300
ccgctcacia ttccacacia catagagcc ggaagcataa agtgtaaagc ctgggggtgcc 360
taatgagtga ggtaactcac attaatgctg ttgcgctcac tgcccgttt ccagtcggga 420
50 aacctgtcgt gccagctgga ttaatgaatc ggccaacgag cggggagagg cggtttgctg 480
attgggcgct cttccgcttc ctgctcact gactcgctgc gctcggtcgt tcggctgcgg 540
55 cgagcgggtat cagctcactc aaaggcggtg atacggttat ccacagaatc aggggataac 600
gcaggaaaga acatgtgagc aaaaggccag caaaaggcca ggaaccgtaa aaaggccgag 660
60 ttgctggcgt ttttccatag gctccgcccc cctgacgagc atcacaaaaa tcgacgctca 720

agtcagaggt ggcgaaaccc gacaggacta taaagatacc aggcgtttcc ccctggaagc 780
tccctcgtgc gctctcctgt tccgaccctg ccgcttaccg gatacctgtc cgcctttctc 840
5 ccttcgggaa gcgtggcgct ttctcatagc tcacgctgta ggatatcag ttcgggtgtag 900
gtcgttcgct ccaagctggg ctgtgtgcac gaaccccccg ttcagcccga ccgctgcgcc 960
10 ttatccggta actatcgtct tgagtccaac ccggtaagac acgacttata gccactggca 1020
gcagccactg gtaacaggat tagcagagcg aggtatgtag gcggtgctac agagttcttg 1080
aagtgggtggc ctaactacgg ctacactaga aggacagtat ttggatatctg cgctctgctg 1140
15 aagccagtta ccttcggaaa aagagttggg agctcttgat ccggcaaaaa aaccaccgct 1200
ggtagcgggtg gtttttttgt ttgcaagcag cagattacgc gcagaaaaaa aggatctcaa 1260
gaagatcctt tgatcttttc tacggggctc gacgctcagt ggaacgaaaa ctcacgttaa 1320
20 gggattttgg tcatgagatt atcaaaaagg atcttcacct agatcctttt aaattaaaaa 1380
tgaagtttta aatcaatcta aagtatatat gagtaaactt ggtctgacag ttaccaatgc 1440
25 ttaatcagtg aggcacctat ctcagcgatc tgtctatttc gttcatccat agttgcctga 1500
ctccccgtcg tgtagataac tacgatacgg gagggcttac catctggccc cagtgtgca 1560
atgataccgc gagaccacg ctcaccggct ccagatttat cagcaataaa ccagccagcc 1620
30 ggaagggccg agcgcagaag tggctctgca actttatccg cctccatcca gtctattaat 1680
tgttgccggg aagctagagt aagtagttcg ccagttaata gtttgcgcaa cgttgttgcc 1740
35 attgctacag gcacgtggg gtcacgctcg tcgtttggta tggttcatt cagctccggg 1800
tcccaacgat caaggcgagt tacatgatcc cccatgttgt gcaaaaaagc ggtagctcc 1860
ttcggtcctc cgatcgttgt cagaagtaag ttggccgcag tggtatcact catggttatg 1920
40 gcagcactgc ataattctct tactgtcatg ccatccgtaa gatgcttttc tgtgactggg 1980
gagtactcaa ccaagtcatt ctgagaatag tgtatgcggc gaccgagttg ctcttgcccg 2040
45 gcgtcaatac gggataatac cgcgccacat agcagaactt taaaagtgct catcattgga 2100
aaacgttctt cggggcgaaa actctcaagg atcttaccgc tgttgagatc cagttcgatg 2160
taaccactc gtgcacccaa ctgatcttca gcatctttta ctttcaccag cgtttctggg 2220
50 tgagcaaaaa caggaaggca aaatgccgca aaaaagggaa taagggcgac acggaaatgt 2280
tgaatactca tactcttctt ttttcaatat tattgaagca tttatcaggg ttattgtctc 2340
55 atgagcggat acatatttga atgtatttag aaaaataaac aaataggggt tccgcgcaca 2400
tttccccgaa aagtgccacc tgaacgaagc atctgtgctt cattttgtag aacaaaaatg 2460
caacgcgaga gcgctaattt ttcaaacaaa gaatctgagc tgcattttta cagaacagaa 2520
60

atgcaacgcg aaagcgctat ttaccaaagc aagaatctgt gcttcatttt tgtaaaacaa 2580
aaatgcaacg cgagagcgct aatttttcaa acaaagaatc tgagctgcat ttttacagaa 2640
5 cagaaatgca acgcgagagc gctattttac caacaaagaa tctatacttc tttttgttc 2700
tacaanaaatg catcccgaga gcgctatttt tctaanaaag catcttagat tacttttttt 2760
ctcctttgtg cgctctataa tgcagtctct tgataacttt ttgcactgta ggtccgtaa 2820
10 ggtagaaga aggctacttt ggtgtctatt ttctcttcca taanaaaagc ctgactccac 2880
ttcccgcggt tactgattac tagcgaagct gcgggtgcat tttttcaaga taaaggcatc 2940
15 cccgattata ttctataccg atgtggattg cgcatacttt gtgaacagaa agtgatagcg 3000
ttgatgattc ttcatgggtc agaaaattat gaacggtttc ttctattttg tctctatata 3060
ctacgtatag gaaatgttta cattttcgtt ttgttttcca ttcactctat gaatagttct 3120
20 tactacaatt tttttgtcta aagagtaata ctagagataa acataaaaaa tgtagaggtc 3180
gagtttagat gcaagttcaa ggagcgaaag gtggatgggt aggttatata gggatatagc 3240
25 acagagatat atagcaaaga gatacttttg agcaatgttt gtggaagcgg tattcgcaat 3300
attttagtag ctggttacag tccggtgcgt ttttggtttt ttgaaagtgc gtcttcagag 3360
cgcttttggt tttcaaaagc gctctgaagt tctatactt tctagagaat aggaacttcg 3420
30 gaataggaac ttcaaagcgt ttccgaaaac gagcgcttcc gaaaatgcaa cgcgagctgc 3480
gcacatacag ctactgttc acgtcgacc tatatctgcg tgttgccgtg atatatatat 3540
35 acatgagaag aacggcatag tgcgtgttta tgcttaaatg cgtacttata tgcgtctatt 3600
tatgtaggat gaaaggtagt ctagtaoctc ctgtgatatt atccattcc atgcgggta 3660
tcgtatgctt ccttcagcac taccctttag ctgtctata tgcgtccact cctcaattgg 3720
40 attagtctca tcttcaatg ctatcatttc ctttgatatt ggatcatatt aagaaccat 3780
tattatcatg acattaacct ataaaaatag gcgtatcacg aggccctttc gtctcgcgcg 3840
45 tttcgggtgat gacggtgaaa acctctgaca catgcagctc ccggagacgg tcacagcttg 3900
tctgtaagcg gatgccggga gcagacaagc ccgtcagggc gcgtcagcgg gtgttgccgg 3960
gtgtcggggc tggttaact atgcggcatc agagcagatt gtactgagag tgcaccatag 4020
50 atcaacgaca ttactatata tataatatag gaagcattta atagacagca tcgtaatata 4080
tgtgtacttt gcagttatga cgcagatgg cagtagtggg agatattctt tattgaaaaa 4140
55 tagcttgta ccttacgtac aatcttgatc cggagctttt ctttttttgc cgattaagaa 4200
ttaattcggc cgaaaaaga aaaggagagg gccaaagagg agggcattgg tgactattga 4260
gcacgtgagt atacgtgatt aagcaacaaa aggcagcttg gattatgtct gttattaatt 4320
60

tcacaggtag ttctggtcca ttggtgaaag tttgcggctt gcagagcaca gaggccgcag 4380
aatgtgctct agattccgat gctgacttgc tgggtattat atgtgtgccc aatagaaaga 4440
5 gaacaattga cccggttatt gcaaggaaaa tttcaagtct tgtaaaagca tataaaaata 4500
gttcaggcac tccgaaatac ttggttggcg tgtttcgtaa tcaacctaaag gaggatgttt 4560
10 tggctctggt caatgattac ggcattgata tcgtccaact gcatggagat gagtctgggc 4620
aagaatacca agagttcctc ggtttgccag ttattaaaag actcgtatctt ccaaaaagact 4680
gcaacatact actcagtga gcttcacaga aacctcattc gtttattccc ttgtttgatt 4740
15 cagaagcagg tgggacaggt gaacttttgg attggaactc gatttctgac tgggttggaa 4800
ggcaagagag ccccgaaagc ttacatttta tgtagctgg tggactgacg ccagaaaatg 4860
ttggtgatgc gcttagatta aatggcgta ttggtgttga tgtaagcgga ggtgtggaga 4920
20 caaatggtgt aaaagactct aacaaaatag caaatctcgt caaaaatgct aagaaatagg 4980
ttattactga gtagtattta ttaagtatt gtttgtgcac ttgccgatct atgcggtgtg 5040
25 aaataccgca cagatgcgta aggagaaaat accgcacacg gaaattgtaa acgttaatat 5100
tttgttaaaa ttcgcgttaa atttttgtta aatcagctca ttttttaacc aataggccga 5160
aatcgcaaaa atcccttata aatcaaaaaga atagaccgag atagggttga gtgttgttcc 5220
30 agtttggaaac aagagtccac tattaagaa cgtggactcc aacgtcaaag ggcgaaaaac 5280
cgtctatcag ggcgatggcc cactacgtga accatcacc taatcaagtt ttttggggtc 5340
35 gaggtgccgt aaagcactaa atcggaaccc taaaggagc ccccgattta gagcttgacg 5400
gggaaagccg gcgaacgtgg cgagaaagga agggaagaaa gcgaaaggag cgggcgctag 5460
ggcgtggca agtgtagcgg tcacgctgcg cgtaaccacc acaccgccc cgcttaatgc 5520
40 gccgctacag ggcgctgcg gccattcgcc attcaggctg cgcaactgtt gggaagggcg 5580
atcggtgccg gcctcttcgc tattacgcca gctggcgaaa gggggatgtg ctgcaaggcg 5640
45 attaagttgg gtaacgccag ggttttccca gtcacgacgt tgtaaaacga cggccagtcg 5700
tccaagcttt cgcgagctcg agatcccag ctttgcaa ataaagccttc gagcgtccca 5760
aaaccttctc aagcaagggt ttcagtataa tgttacatgc gtacacgcgt ctgtacagaa 5820
50 aaaaaagaaa aatttgaaat ataaataacg ttcttaatac taacataact ataaaaaat 5880
aaatagggac ctagacttca gggtgtctaa ctcttctctt ttcgggttaga gcggatgtgg 5940
55 ggggagggcg tgaatgtaag cgtgacataa ctaattacat gatatccttt tgttgtttcc 6000
gggtgtacaa tatggacttc ctcttttctg gcaaccaaac ccatacatcg ggattcctat 6060
aataccttcg ttggtctccc taacatgtag gtggcgagg ggagatatac aatagaacag 6120
60

ataccagaca agacataatg ggctaaacaa gactacacca attacactgc ctcatatgatg 6180
 gtggtacata acgaactaat actgtagccc tagacttgat agccatcatc atacgaagt 6240
 5 ttcactaccc tttttccatt tgccatctat tgaagtaata ataggcgcat gcaacttctt 6300
 ttcttttttt ttctttttct tctccccgt tgttgtctca ccatatccgc aatgacaaaa 6360
 aaaatgatgg aagacactaa aggaaaaaat taacgacaaa gacagcacca acagatgtcg 6420
 10 ttgttccaga gctgatgagg ggtatcttcg aacacacgaa acttttttct tccttcattc 6480
 acgcacacta ctctctaag agcaacggta tacggccttc cttccagtta cttgaatttg 6540
 15 aaataaaaa agtttgccgc tttgctatca agtataaata gacctgcaat tattaatctt 6600
 ttgtttcttc gtcattgttc tegtccctt tcttcttgt ttctttttct gcacaatatt 6660
 tcaagctata ccaagcatac aatcaactcc aagcttgaag caagcctcct gaaagatgaa 6720
 20 gctactgtct tctatcgaa aagcatgcga tatttgccga cttaaaaagc tcaagtgtc 6780
 caaagaaaaa ccgaagtgcg ccaagtgtct gaagaacaac tgggagtgtc gctactctcc 6840
 25 caaaaccaa aggtctccgc tgactagggc acatctgaca gaagtggaat caaggctaga 6900
 aagactggaa cagctatttc tactgatttt tctctgagaa gacctgaca tgattttgaa 6960
 aatggattct ttacaggata taaaagcatt gttaacagga ttatttgtac aagataatgt 7020
 30 gaataaagat gccgtcacag atagattggc ttcagtggag actgatatgc ctctaacatt 7080
 gagacagcat agaataagt cgacatcatc atcggaagag agtagtaaca aaggtcaaag 7140
 35 acagttgact gtatcgccgg aattcttaat acgactcact atagggcata tggccatgga 7200
 ggccccggg 7209

40

<210> 9

<211> 6820

45

<212> DNA

<213> Artificial Sequence

50

<220>

<223> Description of Artificial Sequence: plasmid DNA

55

<400> 9

60

gatccgtcga cagatctccc tatagtgagt cgtattactg cagagatcta tgaatcgtag 60

atactgaaaa accccgcaag ttcacttcaa ctgtgcatcg tgcaccatct caatttcttt 120
catttataca tcgttttgcc ttcttttatg taactatact cctctaagtt tcaatcttgg 180
5 ccatgtaacc tctgatctat agaatttttt aaatgactag aattaatgcc catctttttt 240
ttggacctaa attcttcatg aaaatatatt acgagggtt attcagaagc tttggacttc 300
10 ttgccagag gtttgggtcaa gtctccaatc aagggtgtcg gcttgtctac cttgccagaa 360
atttacgaaa agatggaaaa gggtaaatac gttggttagat acgttgttga cacttctaaa 420
taagcgaatt tcttatgatt tatgattttt attattaaat aagttataaa aaaaataagt 480
15 gtatacaaat tttaaagtga ctcttaggtt ttaaaacgaa aattcttggt cttgagtaac 540
tctttctgt aggtcaggtt gctttctcag gtatagcatg aggtcgctct tattgaccac 600
20 acctctaccg gcatgcccga aattccccta ccctatgaac atattccatt ttgtaatttc 660
gtgtcgtttc tattatgaat ttcatttata aagtttatgt acaaatatca taaaaaaga 720
gaatcttttt aagcaaggat tttcttaact tcttcggcga cagcatcacc gacttcggtg 780
25 gtactgttgg aaccaccta atcaccagtt ctgatactg catccaaaac ctttttaact 840
gcatcttcaa tggccttacc ttcttcaggc aagttcaatg acaatttcaa catcattgca 900
30 gcagacaaga tagtggcgat aggtcaacc ttattctttg gcaaactctg agcagaaccg 960
tggcatggtt cgtacaaacc aaatgcggtg ttcttgtctg gcaaagaggc caaggacgca 1020
gatggcaaca aacccaagga acctgggata acggaggctt catcggagat gatatcacca 1080
35 aacatgttgc tgggtgattat aataccattt aggtgggtt ggttcttaac taggatcatg 1140
gcggcagaat caatcaattg atgttgaacc ttcaatgtag gaaattcgtt cttgatggtt 1200
40 tctccacag ttttctcca taatcttgaa gaggccaaaa cattagcttt atccaaggac 1260
caaataggca atggtggctc atgtttagg gccatgaaag cggccattct tgtgattctt 1320
tgcacttctg gaacggtgta ttgttacta tccaagcga caccatcacc atcgtcttcc 1380
45 tttctcttac caaagtaa atctccact aattctctga caacaacgaa gtcagtacct 1440
ttagcaaatt gtggcttgat tggagataag tctaaaagag agtcggatgc aaagttacat 1500
50 ggtcttaagt tggcgtacaa ttgaagttct ttacggattt ttagtaaacc ttgttcaggt 1560
ctaactac ctgtacccca tttaggacca cccacagcac ctaacaaaac ggcatacacc 1620
ttcttgagg cttccagcgc ctcatctgga agtgggacac ctgtagcatc gatagcagca 1680
55 ccaccaatta aatgattttc gaaatcgaa ttgacattgg aacgaacatc agaaatagct 1740
ttaagaacct taatggcttc ggtgtgatt tcttgaccaa cgtggtcacc tggcaaacg 1800
60 acgatcttct taggggcaga cattagaatg gtatctctt gaaatatata tatatattgc 1860

tgaaatgtaa aaggtaaagaa aagttagaaa gtaagacgat tgctaaccac ctattggaaa 1920
 aaacaatagg tccttaaata atattgtcaa cttcaagtat tgtgatgcaa gcatttagtc 1980
 5 atgaacgctt ctctattcta tatgaaaagc cggttccggc ctctcacctt tcctttttct 2040
 cccaattttt cagttgaaaa aggtatatgc gtcaggcgac ctctgaaatt aacaaaaaat 2100
 10 ttccagtcac cgaatttgat tctgtgcgat agcgccctg tgtgttctcg ttatgttgag 2160
 gaaaaaaata atggttgcta agagattcga actcttgcat cttacgatac ctgagtattc 2220
 ccacagttgg ggatctcgac tctagctaga ggatcaattc gtaatcatgg tcatagctgt 2280
 15 ttctgtgtg aaattgttat ccgctcacia ttccacacia catacgagcc ggaagcataa 2340
 agtgtaaagc ctggggtgcc taatgagtga ggtaactcac attaatgagc ttgcgctcac 2400
 tgcccgcttt ccagtcggga aacctgtcgt gccagctgga ttaatgaatc ggccaacgag 2460
 20 cggggagagg cggtttgctt attgggcgtt cttccgcttc ctgctcact gactcgctgc 2520
 gctcggtcgt tcggctgcgg cgagcggtat cagctcactc aaaggcggtg atacggttat 2580
 25 ccacagaatc aggggataac gcaggaaaga acatgtgagc aaaaggccag caaaaggcca 2640
 ggaaccgtaa aaaggccgag ttgctggcgt tttccatag gctccgccc cctgacgagc 2700
 atcacaaaaa tcgacgtca agtcagaggt ggcgaaacc gacaggacta taaagatacc 2760
 30 aggcgtttcc cctggaagc tccctcgtgc gctctcgtt tccgaccctg ccgcttaccg 2820
 gatactgtc cgcctttctc ccttcgggaa gcgtggcgct ttctcatagc tcacgctgta 2880
 35 ggtatctcag ttcggtgtag gtggttcgt ccaagctggg ctgtgtgcac gaacccccg 2940
 ttcagccga ccgctgcgc ttatccggtg actatcgtt tgagtccaac ccggtgaagc 3000
 acgacttacc gccactggca gcagccactg gtaacaggat tagcagagcg aggtatgtag 3060
 40 gcggtgctac agagtcttg aagtgggtgg ctaactacgg ctacactaga aggacagtat 3120
 ttggtatctg cgctctgctg aagccagtta ccttcggaaa aagagttggt agctcttgat 3180
 45 ccggcaaaaca aaccaccgct ggtagcgggt gtttttttgt ttgcaagcag cagattacgc 3240
 gcagaaaaaa aggatctcaa gaagatcctt tgatcttttc tacgggtct gacgctcagt 3300
 ggaacgaaaa ctcacgttaa gggattttgg tcatgagatt atcaaaaagg atcttcacct 3360
 50 agatcctttt aaattaaaaa tgaagtttta aatcaatcta aagtatatat gagtaaactt 3420
 ggtctgacag ttaccaatgc ttaatcagtg aggcacctat ctcagcgatc tgtctatttc 3480
 55 gttcatccat agttgcctga ctccccgtcg tgtagataac tacgatacgg gagggcttac 3540
 catctggccc cagtgtgca atgataccgc gagaccacg ctcaccggct ccagatttat 3600
 cagcaataaa ccagccagcc ggaagggcgg agcgcagaag tggctctgca actttatccg 3660
 60

cctccatcca gtctattaat tgttgccggg aagctagagt aagtagttcg ccagttaata 3720
 gtttgcgcaa cggtgttgcc attgctacag gcatcggtgt gtcacgctcg tcgtttggtta 3780
 5 tggcttcatt cagctccggt tcccaacgat caaggcgagt tacatgatcc cccatgttgt 3840
 gcaaaaaagc ggtagctcc ttcggtcctc cgatcggtgt cagaagtaag ttggccgcag 3900
 10 tgttatcact catggttatg gcagcactgc ataattctct tactgtcatg ccatccgtaa 3960
 gatgcttttc tgtgactggt gagtactcaa ccaagtcatt ctgagaatag tgtatgcggc 4020
 gaccgagttg ctcttgcccg gcgtcaatac gggataatac cgcgccacat agcagaactt 4080
 15 taaaagtgct catcattgga aaacgttctt cggggcgaaa actctcaagg atcttaccgc 4140
 tgttgagatc cagttcgatg taaccactc gtgcacccaa ctgatcttca gcatctttta 4200
 ctttcaccag cgtttctggg tgagcaaaaa caggaaggca aaatgccgca aaaaagggaa 4260
 20 taagggcgac acggaaatgt tgaatactca tactcttctt ttttcaatat tattgaagca 4320
 tttatcaggg ttattgtctc atgagcggat acatatttga atgtatttag aaaaataaac 4380
 25 aaataggggt tccgcgcaca tttccccgaa aagtgccacc tgacgtctaa gaaaccatta 4440
 ttatcatgac attaacctat aaaaataggc gtatcacgag gccctttcgt ctgcgcggtt 4500
 tcggtgatga cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc 4560
 30 tgtaagcga tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt 4620
 gtcggggctg gcttaactat gcggcatcag agcagattgt actgagagtg caccataacg 4680
 35 catttaagca taaacacgca ctatgccgtt cttctcatgt atatatatat acaggcaaca 4740
 cgcagatata ggtgcgacgt gaacagtgag ctgtatgtgc gcagctcgcg ttgcattttc 4800
 ggaagcgtc gttttcgaa acgctttgaa gttcctattc cgaagttcct attctctagc 4860
 40 tagaaagtat aggaacttca gagcgctttt gaaaaccaa agcgctctga agacgcactt 4920
 tcaaaaaacc aaaaacgcac cggactgtaa cgagctacta aaatattgcy aataccgctt 4980
 45 ccacaaacat tgctcaaaag tatctctttg ctatatatct ctgtgctata tccctatata 5040
 acctacccat ccacctttcg ctccctgaac ttgcatctaa actcgacctc tacatttttt 5100
 atgtttatct ctagtattac tctttagaca aaaaaattgt agtaagaact attcatagag 5160
 50 tgaatcgaaa acaatacgaa aatgtaaaaca tttcctatac gtagtatata gagacaaaat 5220
 agaagaaacc gttcataatt ttctgaccaa tgaagaatca tcaacgctat cactttctgt 5280
 55 tcacaaagta tgcgcaatcc acatcggtat agaataaat cggggatgcc tttatcttga 5340
 aaaaatgcac ccgcagcttc gctagtaatc agtaaacgcg ggaagtggag tcaggctttt 5400
 60 tttatggaag agaaaataga caccaaaagta gccttcttct aaccttaacg gacctacagt 5460

gcaaaaagtt atcaagagac tgcattatag agcgcacaaa ggagaaaaaa agtaatctaa 5520
gatgctttgt tagaaaaata gcgctctcgg gatgcatttt tgtagaacaa aaaagaagta 5580
5 tagattcttt gttggtaaaa tagcgctctc gcgttgcat tctgttctgt aaaaatgcag 5640
ctcagattct ttgtttgaaa aattagcgct ctgcggttgc atttttgttt tacaaaaatg 5700
aagcacagat tcttcgttgg taaaatagcg ctttcgctt gcatttctgt tctgtaaaaa 5760
10 tgcagctcag attctttgtt tgaaaaatta gcgctctcgc gttgcatttt tgttctacaa 5820
aatgaagcac agatgcttcg ttgcttgcac gcaacttctt ttcttttttt ttcttttctc 5880
15 tctccccgt tgtgtctca ccatatccgc aatgacaaaa aaaatgatgg aagacactaa 5940
aggaaaaaat taacgacaaa gacagcacca acagatgtcg ttgttccaga gctgatgagg 6000
ggatcttcg aacacacgaa actttttcct tccttcattc acgcacacta ctctctaata 6060
20 agcaacggta tacggccttc cttccagtta cttgaatttg aaataaaaaa agtttgccgc 6120
tttgcataca agtataaata gacctgcaat tattaatctt ttgtttctc gtcattgttc 6180
25 tcgttcctt tcttccttgt ttctttttct gcacaatatt tcaagctata ccaagcatac 6240
aatcaactcc aagctttgca aagatggata aagcggaatt aattcccgag cctccaaaaa 6300
agaagagaaa ggtcgaattg ggtaccgccc ccaattttaa tcaaagtggg aatattgctg 6360
30 atagctcatt gtccttcact ttcactaaca gtagcaacgg tccgaacctc ataacaactc 6420
aaacaaattc tcaagcgctt tcacaaccaa ttgcctcctc taacgttcat gataacttca 6480
35 tgaataatga aatcacggct agtaaaattg atgatggtaa taattcaaaa ccaactgtcac 6540
ctggttggac ggaccaaact gcgtataacg cgtttggaat cactacaggg atgtttaata 6600
ccactacaat ggatgatgta tataactatc tattcgatga tgaagatacc ccaccaaacc 6660
40 caaaaaaaga gatogaattc ttaatacgac tcactatagg gcccatggac gaagaatcca 6720
gttcattctt atgtacctat gctgagaatc gtgccaataa gaagccaata cttccttaga 6780
45 tgatgcaata aatattaaaa taaaacaaaa cagaaggctg 6820

<210> 10

<211> 10597

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: plasmid DNA

5 <400> 10

ccggtgtgtac cgggcccccc ctcgaggctg acggtatcga taagctttcg tcattgaaaa 60
gaaggataag aatggacgat gggagaagc tctcgttggt ccaggagatc agaaaacagc 120
10 aactgttcca aatcttaagg agggagaaga atatcaattc agaatttctg ctcgtaacaa 180
ggctggaact ggagatcctt ctgatccttc tgatcgtggt gttgcaagc caagaaacct 240
15 tgctccaaga attcatcgtg aagatctttc tgatacaact gtcaaggctg gagccactct 300
caagttcatt gttcatattg atggtgagcc agcaccagat gtaacatggt cattcaatgg 360
aaaaggaatc ggagagagca aggctcaaat tgaaaatgag ccatacatct cgagatttgc 420
20 tttgccaaag gcacttcgta agcaaagtgg aaaatatacc atcactgcaa ccaacattaa 480
tggaactgac agtgtcacta tcaatatcaa ggtaaaaagc aagccaacga aaccaaaggg 540
25 accaatcgag gtaactgatg tcttcgaaga tcgtgcaact cttgactgga aaccaccaga 600
ggatgacgga ggagagccaa ttgagttcta tgaaattgaa aagatgaaca ccaaggacgg 660
aatctgggtt ccatgtggac gtagtggaga taccacttc acagtcgatt cactcaacaa 720
30 gggagatcat tacaagttcc gtgtcaaggc tgtcaacagc gaaggacctt ctgatccatt 780
ggaaactgaa accgatattt tggctaaaaa tccatttgat cgtccagata gaccaggctg 840
35 tccagagcca actgattggg attctgatca tgttgatctc aagtgggatc cactagtctt 900
agaagcgtg ctaagggggc cctcgtcgag tcggtcacia tcacctgaaa ctccaaaggc 960
agccagtgag gaacgtgaag aagaagaaaa agagtcattc gaacagggtt gattttcttt 1020
40 ctggtcaaaa agatgaaatt attgattttc agccagatac tccaaaact agcagcgaga 1080
agtctgcaag tcgttcacag tcgccagag aatcgcgga agtgagccaa gaggtatggt 1140
45 tttcaaaaat caataactga tcataatttt tattgtttgg tgaatttaag aaaataatat 1200
tcgaaaattc ctctgaatta tcaagattgc agtattaatt tcgagaaaaa ttgagatatt 1260
catagagcta ttgtaaattt tcttgatttc agactgaaac ttcggaaaat caagagaaaa 1320
50 tcaaagaaaa ggatgacggg gatgatcagc ctggcacacc gaacagctat agaagccggg 1380
aaacttcacc agtccaaaa aggtccaagg agaccagggt tgtcaaaagc ttctgcat 1440
55 taattctcat ttcaattttt cagagaatca gagtctctg aaaaatcccc ggttcgttca 1500
agatctccca gaaggtcttc agcacgttcc cgtcacgat ctctagacg gcgccgagaa 1560
agaagctcag aaagaaagca atccgaagag ccagcaccgc taccagagaa aaagaagaaa 1620

60

gagccgctgg atattctacg aacaagaacc ggaggagcat atattccacc cgccaaactt 1680
cgacttatgc aacaacagat tagtgataag caaagtgaac agtatcagag aatgaattgg 1740
5 gaaagaatga agaaaaagat tcacggattg gttaacagag tcaacgcgaa gaatcttggt 1800
caaattgtca gagaacttct tcaagagaat gtgattcggt caaagtgagt gagaaaaatcg 1860
10 aaggaaaagg aaagaattaa tttaattttt caggggactt ctctgccgtg acattattca 1920
agctcaggct ttctcaccag gattctctaa cgtctatgca gctttggcgg cagttatcaa 1980
ctcgaaattc cctcatgtcg gtgaacttct tctccgtcgt ctgattgtac agttcaaaag 2040
15 aagtttccgt agaaatgaca gaggcgtcac ggtgaacgtg atcaaattca tcgcacattt 2100
gattaatcaa caagttgctc acgaagttct tgcgctggaa atcatgattc tgatgcttga 2160
agaaccaact gatgattcag ttgaagtcgc cattgcgttc ctgaaagagt gtggagcaaa 2220
20 gcttctggag attgctccag cagctcttaa cagtgtctac gaccgtcttc gtgcaattct 2280
catggaaact gaaagatcgg aaaatgcact ggatcgacgt attcagtata tgattgagac 2340
25 tgcaatgcag attcgaaagg acaaatttgc ggtaaggtag aatatataaa tagtttatta 2400
gaaaaaaata aattagaata atttaaattc ctactagcca atcaggcgac ctttttgctc 2460
atagttctat tattgaaaaa tttggagaat ttctcatatt ctcgctcgga aatctggaat 2520
30 tcgacgagat cttctggctt ctgtgcagct gcacgcttt gtgctccctt tctcgcttgt 2580
cttctgtgta caccaagaac cttgttgagt tcatcaactg aatctgtgac tggcttggtg 2640
35 ctcaactgat gactagacg actgattctc gagaaatcag attgagttgc gattaggggtg 2700
acctagaaat tgggaataat acgaactttt gaaaatattc aggaggatta aaaaaattat 2760
tctcgacaat cctacaaatt tacttattgc accatgttgc tccaacattt ttcattaaaa 2820
40 gttaatgaaa aaatgtagaa aatcggaaat tggcaatttt cagaccattt ttaagcattt 2880
tcaaaaaaaaa attgcagctg aaataaatgt ctttttcaga taaatcgagc gattttctgt 2940
45 tgtctgacac tagtttttag ttttaaaaaa tgttggaaga acatggtgca ataggtaatt 3000
tcatagaatt tccatgtgtt ttttttcaat taaccaatta tccaaatctt ccaaactcac 3060
attttgcgga gctgggctat caagaatctg ctgcagtttt ataagacgag catctctgat 3120
50 atcaactgaaa attaatTTTT aatcaaaact tgaatatcaa ctaaaccac ttattaactt 3180
tctgatctt ctgtcggtcg gtacgatgac ggtgaagaag ccaattgtag tagttgattt 3240
55 ggttcaagtc ctttcgggtg tgtacgtcag tgtcctgcaa tgctatttag ttataactta 3300
ggcctaagat tcaatttaaat gaagtgatta aatttgttct ctgaacctct taagatgac 3360
ttttggatta gaaacatata agacagggtt acctatctat taaaaaacag atcaaaatag 3420
60

atacgaccaa atcggataat ccatgcctac ctggcatcta ggaacgtggt cttagaagat 3480
ttcttacgta atcgtatgaa gaaataacaa tttgatcggt ggccagcaaa aatagggttt 3540
5 taagtgggat agtgttttta ttagctaacc ggaaaaat ttagtttttt tttgcaagaa 3600
accactgaaa accccctaatt tgtatacatt ttttgagca gcttctggtc tttttgagca 3660
10 ataaaaattcg ataaaacaga atttaagtgt aaattgttca catttagttt ctattttatc 3720
aaattttgtt gctcaaaaac attcgaagct gctctaaaaa aatgcattaa aaaaggggtt 3780
ttcagtggtt tttcacatta aaaaagctaa ttttaactaa aaatccatca tatttccaac 3840
15 tttgtcacia caataaaatg ctggtcaaaa tgtgttcgaa aaaatgtttt tttttttaat 3900
ttttataatt taaaaatagt tttctttcgc tgggacacat acatttttgg gcgtaaattt 3960
tcagttcaaa tttccatttt tacaaccata atcataaagc tacgtctgat ctctctcgca 4020
20 cttacctgcg cctgattcga aagaacaacc gtagccaaaa gaacaagaag aacaagcacg 4080
tagttgtggt agtggacgtt catcacgcaa tactgaccaa tggctgtggg gtctcacttt 4140
25 ccgtactatt gagagagggg agactgaaga tggcaattga ggacagtgtc ttcgacgcac 4200
gcatgcatcc ataagcataa tccaggaggg atggagagaa aaatcttgtt tctaagcccc 4260
tccctttgta atacatacac atatctaata ccgaagaatg gctaattgaa tggacgtcag 4320
30 ctgttgctgt agttgccaa gcatcatcga tgaaataact gaaagaaaga attaaataat 4380
tattgcaggc gtatccggcg gtcattgaag acttggaactt gattgaggag gaggatcaga 4440
35 tcatccatac acttaatttg gaggatgcgg ttgatccgga aaatgggctt agtaagtgcac 4500
tgaccacacg cggggggcat taatttaata aattgaattc catttcagat gtgttcaaac 4560
tagatccaga attcgaaaag aacgaggagg tttatgagga gatccgtaag gaaatcattg 4620
40 gaaacgccga tatttcggat gaggatggtg gcgacgagtt ggatgatgaa gaagagggtg 4680
gtgatgtgga agaggctccg aagaagacta cagagattat tgataatact gatcagaatt 4740
45 gactgctttc agaaggtatt ctttttgagt tttgggcccg caaatctgta agttgccggt 4800
tgccgaaaat ttgctgaatt tgccgaaaaa aaaaattccg gaatttat ttttactttt 4860
tgtaaaaatt aaattaaatt tgcaactttt cagagaagtc tacctgacaa tgcaatcatc 4920
50 tttggactac caagaagctg ctcaaaaatt gctgaaaatg aagattccag acagcatgca 4980
ggtcagcgat gttgcaaaga aaaattttcg accaaaaaaa ccaaccaatc ataaaattta 5040
55 aaaaaaaact ccgttttttt cttttttttt atacgagaaa aacaaaaaaa atgtattttt 5100
gccaaattct aaaatactat ccccgaaatt ttcaatattt tctctttcag aacgaactct 5160
gcgcgatgct tgtcgattgt tgtgetcaac agcgtaccta cgagcgattc tacggaatgc 5220
60

tcacgaacg tttctgccga cttgcctcg aataccagca atactttgaa aagctctgcc 5280
aggacacgta ttccacgatt caccgaattg acatcacaaa actgcggaat ttggctcgcc 5340
5 ttattgctca tttgctctcg acggatgcta ttgactggaa gattttggcc gatatgaaaa 5400
tgaccgaaga ggacacaact tcttctggca gaatctatat taaatatata tttaatgaac 5460
ttgtggaggc gatgggaatg gttaaacttc attcgagagt tactgatccg tgagtctcct 5520
10 agagagagtt gtttctgtat tcaattttcc ctattttcag aactttggct cattgctttg 5580
ttggattatt cccacgaact aatccgaaca gcgcacgatt ttcgatcaac ttcttcacaa 5640
15 tgattggatt ggggtggttg acgttgaac ttcgtgaatg gctggcaaag ggtctcaaga 5700
agaagaaggg aatgctggat cagttgaagg ccgaatcaag ctcagattca tcgtcgtctt 5760
cggattcgtc agactcgtct gattcttcgg attctgacga ttcacccgac tcgtcttcag 5820
20 attcctcatc ttcttcagaa tcagagccag aaccaccgaa gaaaaagaag aagaagaaca 5880
gtgaagagag ttccaaaaag aaggaaaaag agaatttgg tcgacgggat cgtggagaca 5940
25 agagagctga acgtcatcgt gatcaaagtg tggagaacaa ggacaaggat cgtcgacgtc 6000
gccaggattc tgacgaaaat cgtcggccag aacgaggaga tgaccgcaag gatcggagta 6060
aagatcgtcg tcgtcaagac tcggatgatg aggatcggaa aggtcgtgaa cgtcgggaag 6120
30 attcagggga aagacgtcgc ggagatcggg atcgacgtga tcgaaacaag gatcaggagg 6180
atcacctga agatcgccgt gaccgaagca aggatcgtga ggatcgacgt gatcgccgtc 6240
35 gtcattgactc tgatgatgat cgtaaaactc gtcgggatag aagtgaagag cgaggaggac 6300
gtcgtcgtga agtggaatcg gatgatcgac gccgacgtcg ttgaattttc aaattttaaa 6360
tactgaatat ttgtttttt tcttattatt tatttattct ctttgtgtt ttttcttgc 6420
40 tttctaaaaa attaatcaaa tccaaatcta aacatgagcg gtttttttc tctttccgtc 6480
tcccaattcg tattccgctc ctctcatctg aacacaatgt gcaagtttat ttatcttctc 6540
45 gctttcattt cattaggacg tggggggaat tgggtggaag gggaaacaca caaaaggatg 6600
atggaaatga aataaggaca cacaatatgc aacaacattc aattcagaaa tatggaggaa 6660
ggtttaaaag aaaacataaa aatatataga ggaggaagga aaactagtaa aaaataagca 6720
50 aagaaattag gcgaacgatg agaattgtcc tcgcttggca aatgcgaatc cgtatggaga 6780
ggcacgtttg gcgaaggcaa atgttcggta tggagatctg taaaaatttt taagttgaaa 6840
55 tttggtgttg ctcttttaca aaattttccg attttcgctt gaaattacgg tgccaggctt 6900
cgacacgtct tccaattttt caaattcaaa agagccttta atgggctgta gttgctaatt 6960
60 tctcgttttt gaaaattttt cttccgttta atcgaaattt gatgtatttt atttatgatt 7020

ttcaataaat ttcaaagaaa ctggtgaaaa ctcggaataat tgtgaactac agtaatccaa 7080
 tccttaaagg cgcacacctt ttaaagtgtc gccccaatac gatatttttt taagattcgc 7140
 5 tagagcggcc gccaccgagg tggagctcca attcgcccta tagtgagtcg tattacaatt 7200
 cactggccgt cgtttttaca cgtcgtgact gggaaaaccc tggcgttacc caacttaatc 7260
 gccttgacgc acatcccccc ttccgcagct ggcgtaatag cgaagaggcc cgcaccgatc 7320
 10 gcccttccca acagttgcgt agcctgaatg gcgaatggga cgcgcctgt agcggcgcat 7380
 taagcggggc ggggtgtgtg gttacgcgca gcgtgaccgc tacacttgcc agcgccttag 7440
 15 cggccgctcc ttccgctttc ttcccttccct ttctcgccac gtccgcccgc tttcccgcgc 7500
 aagctctaaa tcgggggctc cctttagggt tccgatttag tgctttacgg cacctcgacc 7560
 ccaaaaaact tgattagggt gatgggtcac gtagtgggac atcgccctga tagacgggtt 7620
 20 ttccgcccctt gacgttggag tccacgttct ttaatagtgg actcttggtc caaactggaa 7680
 caaactcaa ccctatctcg gtctattctt ttgatttata agggattttg ccgatttcgg 7740
 25 cctattgggt aaaaaatgag ctgatttaac aaaaatttaa cgcgaatttt aacaaaatat 7800
 taacgtttac aatttcagggt ggcacttttc ggggaaatgt gcgcggaacc cctatttggt 7860
 tatttttcta aatacattca aatatgtatc cgctcatgag acaataaccc tgataaatgc 7920
 30 ttcaataata ttgaaaaagg aagagtatga gtattcaaca ttccgctgac gcccttattc 7980
 ccttttttgc ggcattttgc ctctctgttt ttgctcacc agaaacgctg gtgaaagtaa 8040
 35 aagatgctga agatcagttg ggtgcacgag tgggttacat cgaactggat ctcaacagcg 8100
 gtaagatcct tgagagtttt cggcccgaag aacgttttcc aatgatgagc acttttaaag 8160
 ttctgctatg tggcgcggtt ttatcccgta ttgacgcgg gcaagagcaa ctcggtcgcc 8220
 40 gcatacacta ttctcagaat gacttggttg agtactcacc agtcacagaa aagcatctta 8280
 cggatggcat gacagtaaga gaattatgca gtgctgccat aagcatgagt gataaactg 8340
 45 cggccaactt acttctgaca acgatcggag gaccgaagga gctaaccgct ttttttcaca 8400
 acatggggga tcatgtaact cgccttgatc gttgggaacc ggagctgaat gaagccatac 8460
 caaacgacga gcgtgacacc acgatgcctg tagcaatggc aacaacgttg cgcaaactat 8520
 50 taactggcga actacttact ctagcttccc ggcaacaatt aatagactgg atggaggcgg 8580
 ataaagttgc aggaccactt ctgcgctcgg cccttcgggc tggctgggtt attgctgata 8640
 55 aatctggagc cggtgagcgt gggctctcgg gtatcattgc agcactgggg ccagatggta 8700
 agccctcccg tatcgtagtt atctacacga cgggcagtca ggcaactatg gatgaacgaa 8760
 atagacagat cgctgagata ggtgcctcac tgattaagca ttggtaactg tcagaccaag 8820
 60

tttactcata tatacttttag attgatttaa aacttcattt ttaatttaaa aggatctagg 8880
 tgaagatcct ttttgataat ctcatgacca aaatccctta acgtgagttt tcgttccact 8940
 5 gagcgtcaga ccccgtagaa aagatcaaag gatcttcttg agatcctttt tttctgcgcg 9000
 taatctgctg cttgcaaaca aaaaaaccac cgctaccagc ggtggtttgt ttgccggatc 9060
 10 aagagctacc aactcttttt ccgaaggtaa ctggcttcag cagagcgcag ataccaaata 9120
 ctgtccttct agtgtagccg tagttaggcc accacttcaa gaactctgta gcaccgccta 9180
 catacctgc tctgctaata ctgttaccag tggctgctgc cagtggcgat aagtcgtgtc 9240
 15 ttaccgggtt ggactcaaga cgatagttac cggataaggc gcagcggtcg ggctgaacgg 9300
 ggggttcgtg cacacagccc agcttgagc gaacgaccta caccgaactg agatacctac 9360
 20 agcgtgagca ttgagaaagc gccacgcttc ccgaaggag aaaggcggac aggtatccgg 9420
 taagcggcag ggtcggaaca ggagagcgca cgaggagct tccagggggg aacgcctgg 9480
 atctttatag tctgtcggg tttcgccacc tctgacttga gcgtcgattt ttgtgatgct 9540
 25 cgtcaggggg gccgagccta tggaaaaacg ccagcaacgc ggccttttta cggttcctgg 9600
 ccttttgctg gccttttgct cacatgttct ttcctgcgtt atcccctgat tctgtggata 9660
 30 accgtattac cgcttttgag tgagctgata ccgctcgccg cagccgaacg accgagcgca 9720
 gcgagtcagt gagcgaggaa gcggaagagc gcccaatacg caaaccgct ctccccgcgc 9780
 gttggccgat tcattaatgc agctggcacg acaggtttcc cgactggaaa gcgggcagt 9840
 35 agcgcaacgc aattaatgtg agttacctca ctcataggc accccaggct ttacacttta 9900
 tgcttcggc tctatgttg tgtggaattg tgagcggata acaatttcac acaggaaaca 9960
 40 gctatgacca tgattacgcc aagctcgga ttaaccctca ctaaaggga caaaagctgg 10020
 gggggatcct ccaaaatcgt cttccgctct gaaaaacgaa agtggacctt tgacatccga 10080
 aaaaatgggc gaaaaaatga aattgagctt tttgggtcga aaaaaatgtt tttagaatgc 10140
 45 tgagaacacg ttaaacacga agatcatatt tattttgaga cccggatgct ctgaaaatgt 10200
 ctgacataga tttaaaaaag catatatata tttttcattt tcaacgtgaa agttttgtgc 10260
 50 aactttatag aatctcctat tggcacattg ttttttattt aactgaggca gtttttgaac 10320
 acctttttga aactttgaat ctctttgaag tatactgtcg aaaagactga cttgagcggt 10380
 cgaaatgcc gaagaaaact atatttgaat ctgcgctaa attgagaaat gcaaccgcgc 10440
 55 tccactggac aattggaaaa aaaatttatt cggaggcgac aacggtat ttcgaaattga 10500
 tttctgtgt atttctcat tttttataaa ttcttctttg atttatcggt cgtttgtgag 10560
 60 aaatttaatt gtattcaaac ttttttatag taagata 10597

<210> 11

5 <211> 10599

<212> DNA

10 <213> Artificial Sequence

<220>

15 <223> Description of Artificial Sequence: plasmid DNA

<400> 11

20 cccggtgggtac cgctagccgt acgaaccgg gttctagaac tagtggatcc cacttgagat 60
caacatgatc agaatcccaa tcagttggct ctggacgacc tggctctatct ggacgatcaa 120
25 atggatTTTT agccaaaata tcggtttcag tttccaatgg atcagaaggt ccttcgctgt 180
tgacagcctt gacacggaac ttgtaatgat ctcccttggt gagtgaatcg actgtgaagt 240
gggtatctcc actacgtcca catggaacc agattccgtc cttggtgttc atcttttcaa 300
30 tttcatagaa ctcaattggc tctcctccgt catcctctgg tggtttccag tcaagagttg 360
cacgatcttc gaagacatca gttacctcga ttgggtccctt tggtttcgtt ggcttgcttt 420
35 ttaccttgat attgatagtg aactgtcag ttccattaat gttggttgca gtgatggtat 480
atcttccact ttgcttacga agtgcctttg gcaaagcaaa tctcgagatg tatgggtcat 540
tttcaatttg agccttgctc tctccgattc cttttccatt gaatgaccat gttacatctg 600
40 gtgctggctc accatcaata tgaacaatga acttgagagt ggctccgacc ttgacagttg 660
tatcagaaag atcttcacga tgaattcttg gagcaagggt tcttggttc gcaacaacac 720
45 gatcagaagg atcagaagga tctccagttc cagccttggt acgagcagaa attctgaatt 780
gatattcttc tccctcctta agatttgga cagttgctgt tttctgatct cctggaacaa 840
cgagagcttc ttcccatcgt ccattcttat ccttcttttc aatgacgaaa gcttatcgat 900
50 accgtcgacc tcgagggggg gccctcgtcg agtcggtcac aatcacctga aactccaaag 960
gcagccagtg aggaacgtga agaagaagaa aaagagtcac ctgaacaggt ttgattttct 1020
55 ttctgggtcaa aaagatgaaa ttattgattt tcagccagat actcccaaaa ctagcagcga 1080
gaagtctgca agtcgttcac agtcgccag agaatcgcgga gaagtgagcc aagaggtagt 1140
tttttcaaaa atcaataact gatcataatt tttattgttt ggtgaattta agaaaataat 1200
60

attcgaaaat tctctgaat tatcaagatt gcagatttaa tttcgagaaa aattgagata 1260
ttcatagagc tattgtaaat tttcttgatt tcagactgaa acttcggaaa atcaagagaa 1320
5 aatcaaagaa aaggatgacg gggatgatca gcctggcaca ccgaacagct atagaagccg 1380
ggaaacttca ccagctccaa aaagggtccaa ggagaccagg tttgtcaaaa gcttcctgcg 1440
attaattctc atttcaattt ttcagagaat cagagtctcc tgaaaaatcc ccggttcggt 1500
10 caagatctcc cagaaggtct tcagcacgtt ccccgtcacg atctcctaga cggcgccgag 1560
aaagaagctc agaaagaaag caatccgaag agccagcacc gctaccagag aaaaagaaga 1620
15 aagagccgct ggatattcta cgaacaagaa cgggaggagc atatattcca cccgccaaac 1680
ttcgacttat gcaacaacag attagtata agcaaagtga acagtatcag agaattgaatt 1740
gggaaagaat gaagaaaaag attcacggat tggttaacag agtcaacgag aagaatcttg 1800
20 ttcaaattgt cagagaactt cttcaagaga atgtgattcg ttcaaagtga gtgagaaaat 1860
cgaaggaaaa ggaaagaatt aatttaattt ttcaggggac ttctctgccc tgacattatt 1920
25 caagctcagg ctttctcacc aggattctct aacgtctatg cagctttggc ggcagttatc 1980
aactcgaaat tccctcatgt cggatgaactt cttctccgct gtctgattgt acagttcaaa 2040
agaagtttcc gtagaaatga cagaggcgct acggtgaacg tgatcaaatt catcgacat 2100
30 ttgattaatc aacaagttgc tcacgaagtt cttgcgctgg aaatcatgat tctgatgctt 2160
gaagaaccaa ctgatgatcc agttgaagtc gccattgcgt tctgaaaga gtgtggagca 2220
35 aagcttctgg agattgctcc agcagctctt aacagtgtct acgaccgtct tcgtgcaatt 2280
ctcatggaaa ctgaaagatc ggaaatgca ctggatcgac gtattcagta tatgattgag 2340
actgcaatgc agattcgaaa ggacaaattt gcggtaaggt agaatatata aatagtttat 2400
40 tagaaaaaaa taaattagaa taatttaaatt tctactagc caatcaggcg acctttttgc 2460
gcatagttct attattgaaa aatttgaga atttctcata ttctcgctcg gaaatctgga 2520
45 attcgacgag atcttctggc ttctgtgcag ctgcatcgct ttgtgctccc tttctcgctt 2580
gtcttctgtg tacaccaaga acctgtgtga gttcatcaac tgaatctgtg actggcttgt 2640
tgctcactgg atgcactaga cgactgatcc tcgagaaatc agattgagtt gcgattaggg 2700
50 tgacctagaa attgggaata atacgaactt ttgaaaatat tcaggaggat taaaaaatt 2760
attctcgaca atcctacaaa ttacttatt gcaccatgtt gctccaacat ttttcattaa 2820
55 aagttaatga aaaaatgtag aaaatcgga attggcaatt ttcagaccat ttttaagcat 2880
tttcaaaaaa aaattgcagc tgaaataaat gtcattttca gataaatcga gcgattttct 2940
gttgtctgac actagttttt agttttaaaa aatgttgga gaacatggtg caataggtaa 3000
60

tttcatagaa tttccatgtg ttttttttca attaaccaat tatccaaatc ttccaaactc 3060
acattttgcg gagctgggct atcaagaatc tgctgcagtt ttataagacg agcatctctg 3120
5 atactactga aaattaattt ttaatcaaaa cttgaatatc aactaaacc cttattaac 3180
tttctcgatc ttctgtcgtt cggtagcatg acggtgaaga agccaattgt agtagttgat 3240
ttggttcaag tcctttcggg gttgtacgtc agtgtcctgc aatgctatct agttataact 3300
10 taggcctaag attcaattta atgaagtgat taaatttggt ctctgaacct cttaagatga 3360
tcttttggt tagaaacata taagacaggt ttacctatct attaaaaaac agatcaaaat 3420
15 agatacgacc aaatcggata atccatgcct acctggcatc taggaacgtg ttcttagaag 3480
atttcttacg taatcgtatg aagaaataac aatttgatcg ttggccagca aaaatagggt 3540
tttaagtggg atagtgtttt tattagctaa cgggaaaatt ttatagtttt tttttgcaag 3600
20 aaaccactga aaaccacctt attgtataca ttttttgagg cagcttctgg tcttttgag 3660
caataaaatt cgataaaaca gaatttaagt gtaaattgtt cacatttagt ttctatttta 3720
25 tcaaattttg ttgctcaaaa acattcgaag ctgctctaaa aaaatgcatt aaaaaagggg 3780
ttttcagtg tttttcacat taaaaagct aattttaact aaaaatccat catatttcca 3840
actttgtcac aacaataaaa tgctgggtcaa aatgtgttcg aaaaaatgtt ttttttttta 3900
30 atttttataa tttaaaaata gttttctttc gctgggacac atacattttt gggcgtaaat 3960
tttcagttca aatttccatt tttaacaacca taatcataaa gctacgtctg atctctctcg 4020
35 cacttacctg cgctgatct gaaagaacaa ccgtagccaa aagaacaaga agaacaagca 4080
cgtagttgtg gtagtgagcg ttcacacgc aatactgacc aatggtcgtg gggctctact 4140
ttccgtacta ttgagagagg ggagactgaa gatggcaatt gaggacagtg tcttcgacgc 4200
40 acgcatgcat ccataagcat aatccaggag ggatggagag aaaaatcttg tttctaagcc 4260
cctcccttg taatacatat acatatctaa taccgaagaa tggctaattg aatggacgtc 4320
45 agctgttgct gtagttgcca aggcacatc gatgaaataa ctgaaagaaa gaattaaata 4380
attattgcag gcgtatccgg cggtcattga agacttgac ttgattgagg aggaggatca 4440
gatcatccat acacttaatt tggaggatgc ggttgatccg gaaaatgggc ttagtaagt 4500
50 actgaccaca cgcggggggc attaatttaa taaattgaat tccatttcag atgtgttcaa 4560
actagatcca gaattcgaaa agaacgagga ggtttatgag gagatccgta aggaaatcat 4620
55 tggaaacgcc gatatttcgg atgaggatgg tggcgacgag ttggatgatg aagaagaggg 4680
tagtgatgtg gaagaggctc cgaagaagac tacagagatt attgataata ctgatcagaa 4740
ttgactgctt tcagaaggta ttcattttga gttttgggcc ggcaaatctg taagttgccg 4800
60

GenBank
Accession: U00096
Version: 1.0
Date: 1998-01-01
Source: Escherichia coli
Strain: O157:H7
Accession: U00096
Version: 1.0
Date: 1998-01-01
Source: Escherichia coli
Strain: O157:H7

gttgccgaaa atttgctgaa ttgcccggaa aaaaaaattc cggaatttat ttaaaaactt 4860
tttgtaaaaa ttaaattaaa ttgcaactt ttcagagaag tctacctgac aatgcaatca 4920
5 tcttttgact accaagaagc tgctcacaaa ttgctgaaaa tgaagattcc agacagcatg 4980
caggtcagcg atgttgcaaa gaaaaatttt cgaccaaaaa aaccaaccaa tcataaaatt 5040
10 taaaaaaaaa ctccgttttt ttcttttttt ttatacgaga aaaaccaaaa aaatgtattt 5100
ttgccaaatt ctaaaatact atccccgaaa ttttcaatat tttctctttc agaacgaact 5160
ctgcgcgatg cttgtcgatt gttgtgctca acagcgtacc tacgagcgat tctacggaat 5220
15 gctcatcgaa cgtttctgcc gacttcgcct cgaataccag caatactttg aaaagctctg 5280
ccaggacacg tattccacga ttcaccgaat tgacatcaca aaactgcgga atttggtctg 5340
ccttattgct catttgctct cgacggatgc tattgactgg aagatttttg ccgatatgaa 5400
20 aatgaccgaa gaggacacaa cttcttctgg cagaatctat attaaatata tatttaatga 5460
acttgtggag gcgatgggaa tgggttaaact tcattcgaga gttactgatc cgtgagtttc 5520
25 ctagagagag ttgttttcgt attcaatttt ccctattttc agaacttttg ctcatgtctt 5580
tgttggatta tccccacgaa ctaatccgaa cagcgcacga ttttcgatca acttcttcac 5640
aatgattgga ttgggtggtt tgacgttgga acttcgtgaa tggctggcaa agggctctca 5700
30 gaagaagaag ggaatgctgg atcagttgaa ggccgaatca agctcagatt catcgctcgtc 5760
ttcggattcg tcagactcgt ctgattcttc ggattctgac gattcatccg actcgtcttc 5820
35 agattcctca tcttcttcag aatcagagcc agaaccaccg aagaaaaaga agaagaagaa 5880
cagtgaagag agttccaaaa agaaggaaaa agagaatatt ggtcgacggg atcgtggaga 5940
caagagagct gaacgtcatc gtgatcaaa ggtggagaac aaggacaagg atcgtcgacg 6000
40 tcgccaggat tctgacgaaa atcgtcggcc agaacgagga gatgaccgca aggatcggag 6060
taaagatcgt cgtcgtcaag actcggatga tgaggatcgg aaaggctcgt aacgtcggga 6120
45 agattcaggg gaaagacgtc gcggagatcg ggatcgacgt gatcgaaaca aggatcagga 6180
ggatcacctg gaagatcgcc gtgaccgaag caaggatcgt gaggatcgac gtgatcgccg 6240
tcgtcatgac tctgatgatg atcgtaaaac tcgtcgggat agaagtgaag agcgaggagg 6300
50 acgtcgtcgt gaagtggaat cggatgatcg acgccgacgt cgttgaattt tcaaatttta 6360
aatactgaat atttgttttt ttctctatta ttattttatt ctctttgtgt ttttttctt 6420
55 gctttctaaa aaattaattc aatccaaatc taaacatgag cggttttttt tctctttccg 6480
tctcccaatt cgtattccgc tctctcacc tgaacacaat gtgcaagttt atttatcttc 6540
tcgctttcat ttcattagga cgtgggggga attggtggaa gggggaaaca cacaaaagga 6600
60

tgatggaaat gaaataagga cacacaatat gcaacaacat tcaattcaga aatatggagg 6660
aagggtttaa agaaaacata aaaatatata gaggaggaag gaaaactagt aaaaaataag 6720
5 caaagaaatt aggcgaacga tgagaattgt cctcgcttgg caaatgcgaa tccgtatgga 6780
gaggcacgtt tggcgaaggc aaatgttcgg tatggagatc tgtaaaaatt ttttaagttga 6840
aatttggtgt tgctctttta caaaattttc cgattttcgc ttgaaattac ggtgccagggt 6900
10 ctcgacacgt cttccaatth ttcaaattca aaagagcctt taatgggctg tagttgctaa 6960
tttctcgtht ttgaaaatth ttcttcogth taatcgaaat ttgatgtatt ttatttatga 7020
15 ttttcaataa atttcaaaga aactggtgaa aactcggaat attgtgaact acagtaatcc 7080
aatccttaa ggcgcacacc ttttaaattgt ccgccccaat acgatattth ttttaagattc 7140
gctagagcgg ccgccaccgc ggtggagctc caattcgccc tatagtgaat cgtattacaa 7200
20 ttcactggcc gtcgtthttac aacgtcgtga ctgggaaaac cctggcgtta cccaacttaa 7260
tcgccttgca gcacatcccc ccttcgccag ctggcgtaat agcgaagagg ccgcaccga 7320
25 tcgccttcc caacagttgc gtacgtgaa tggcgaatgg gacgcgcct gtacggcgc 7380
attaagcgcg gcgggtgtgg tggttacgcg cagcgtgacc gctacacttg ccagcgcct 7440
agcgcgcgt cctttcgctt tcttcccttc ctttctcgcc acgttcgcgc gctttcccg 7500
30 tcaagctcta aatcgggggc tcccttagg gtccgattt agtgctttac ggcacctga 7560
ccccaaaaa cttgattagg gtgatggttc acgtagtggg ccacgcctt gatagacggg 7620
35 ttttcgcct ttgacgttgg agtccacgtt ctttaatagt ggactcttgt tccaaactgg 7680
aacaacactc aaccctatct cggctctattc ttttgattta taagggtatt tgccgatttc 7740
ggcctattgg ttaaaaaatg agctgattta acaaaaattt aacgcgaatt ttaacaaaat 7800
40 attaacgttt acaatttcag gtggcacttt tcggggaaat gtgcgcggaa cccctatttg 7860
tttatttttc taaatacatt caaatatgta tccgctcatg agacaataac cctgataaat 7920
45 gcttcaataa tattgaaaaa ggaagagtat gattattcaa catttccgtg tcgccttat 7980
tccctttttt gcggcatttt gccttcctgt ttttgctcac ccagaaacgc tggtgaaagt 8040
aaaagatgct gaagatcagt tgggtgcacg agtgggttac atcgaactgg atctcaacag 8100
50 cggtaaagatc cttgagagtt ttcgccccga agaacgtttt ccaatgatga gcacttttaa 8160
agttctgcta tgtggcgcgg tattatcccg tattgacgcc gggcaagagc aactcggtcg 8220
55 ccgcatacac tattctcaga atgacttggg tgagtactca ccagtcacag aaaagcatct 8280
tacggatggc atgacagtaa gagaattatg cagtgtgcc ataagcatga gtgataacac 8340
tgcggccaac ttacttctga caacgatcgg aggaccgaag gagctaaccg ctttttttca 8400
60

5
10
15
20
25
30
35
40
45
50
55
60

caacatgggg gatcatgtaa ctgccttga tcgttgggaa ccggagctga atgaagccat 8460
accaaacgac gagcgtgaca ccacgatgcc tgtagcaatg gcaacaacgt tgcgcaaact 8520
5 attaaactggc gaactactta ctctagcttc ccggcaacaa ttaatagact ggatggaggc 8580
ggataaagtt gcaggaccac ttctgcgctc ggcccttcgc gctggctggt ttattgctga 8640
10 taaatctgga gccggtgagc gtgggtctcg cggatcatt gcagcactgg ggccagatgg 8700
taagccctcc cgtatcgtag ttatctacac gacgggcagt caggcaacta tggatgaacg 8760
aaatagacag atcgtgaga taggtgcctc actgattaag cattggtaac tgtcagacca 8820
15 agtttactca tatatacttt agattgattt aaaacttcat ttttaattta aaaggatcta 8880
ggatgaagatc ctttttgata atctcatgac caaaatccct taacgtgagt tttcgttcca 8940
ctgagcgtca gaccccgtag aaaagatcaa aggatcttct tgagatcctt tttttctgcy 9000
20 cgtaatctgc tgcttgcaaa caaaaaaacc accgctacca gcggtgggtt gtttgccgga 9060
tcaagagcta ccaactcttt ttccgaaggt aactggcttc agcagagcgc agataccaaa 9120
25 tactgtcctt ctagtgtagc cgtagttagg ccaccacttc aagaactctg tagcaccgcc 9180
tacatacctc gctctgctaa tctgttacc agtggctgct gccagtggcg ataagtcgtg 9240
tcttaccggg ttggactcaa gacgatagtt accggataag gcgcagcggc cgggctgaac 9300
30 ggggggttcg tgcacacagc ccagcttgga gcgaacgacc tacaccgaac tgagatacct 9360
acagcgtgag cattgagaaa gcgccacgtt tccgaaggg agaaaggcgg acaggtatcc 9420
35 ggtaagcggc agggctcgaa caggagagcg cacgaggag cttccagggg ggaacgcctg 9480
gtatctttat agtcctgtcg ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg 9540
ctcgtcaggg gggccgagcc tatggaaaaa cgccagcaac gcggcctttt tacggttcct 9600
40 ggccttttgc tggccttttg ctacatggt ctttctgcy ttatccctg attctgtgga 9660
taaccgtatt accgccttg agtgagctga taccgctcg cgacccgaa cgaccgagcg 9720
45 cagcagtgca gtgagcgagg aagcggaaga gcgccaata cgcaaaccgc ctctccccgc 9780
gcgttggccg attcattaat gcagctggca cgacagggtt ccgactgga aagcgggcag 9840
tgagcgcaac gcaattaatg tgagttacct cactcattag gcaccccagg ctttacactt 9900
50 tatgcttcgc gctcctatgt tgtgtggaat tgtgagcgga taacaatttc acacaggaaa 9960
cagctatgac catgattacg ccaagctcgg aattaaccct cactaaaggg aaaaaagct 10020
55 gggggggatc ctccaaaatc gtcttcgcgt ctgaaaaacg aaagtggacc tttgacatcc 10080
gaaaaaatgg gcgaaaaaat gaaattgagc ttttgggtc gaaaaaatg tttttagaat 10140
gctgagaaca cgttaaacac gaagatcata tttatttga gaccggatg ctctgaaaat 10200
60

gtctgacata gatttaaaaa agcatatata tatttttcat tttcaacgtg aaagttttgt 10260
gcaactttat agaattctct attggcacat tgttttttat ttaactgagg cagtttttga 10320
5 acaccttttt gaaactttga atctctttga agtatactgt cgaaaagact gacttgagcg 10380
ttcgaaatgc cagaagaaaa ctatatttga atctcgcgct aaattgagaa atgcaaccgc 10440
gctccactgg acaattggaa aaaaaattta ttcggaggcg acaacggtat tttcgaaatt 10500
10 gattttctgt gtattttctc attttttata aattcttctt tgatttatcg ttcgtttgtg 10560
agaaatttaa ttgtattcaa acttttttat agtaagata 10599

15

<210> 12

<211> 23

<212> DNA

<213> Artificial Sequence

25

<220>

<223> Description of Artificial Sequence: T7 promoter DNA

30

<400> 12

35 taatacgact cactataggg cga

23

<210> 13

40

<211> 35

<212> DNA

45 <213> Artificial Sequence

<220>

50

<223> Description of Artificial Sequence: oligonucleotide DNA

55 <400> 13

agctgtaata cgactcacta tagggcgaga agctt

35

60

<210> 14

<211> 35

5 <212> DNA

<213> Artificial Sequence

10

<220>

<223> Description of Artificial Sequence: oligonucleotide DNA

15

<400> 14

tcgaaagctt ctcgcataat agtgagtcgt attac

35

20

<210> 15

25

<211> 29

<212> DNA

30 <213> Artificial Sequence

<220>

35

<223> Description of Artificial Sequence: oligonucleotide DNA

40 <400> 15

catggcagga tgaacacgat taacatcgc

29

45

<210> 16

<211> 32

50 <212> DNA

<213> Artificial Sequence

55

<220>

<223> Description of Artificial Sequence: oligonucleotide DNA

60

<400> 16

5 atggcccat gggtacggga acgcgaagtc cg 32

<210> 17

10 <211> 29

<212> DNA

15 <213> Artificial Sequence

<220>

20 <223> Description of Artificial Sequence: oligonucleotide DNA

<400> 17

25 atggaattct tacgcgaacg cgaagtccg 29

30 <210> 18

<211> 30

<212> DNA

35 <213> Artificial Sequence

40 <220>

<223> Description of Artificial Sequence: oligonucleotide DNA

45 <400> 18

ctcaccggta atgaacacga ttaacatcgc 30

50 <210> 19

<211> 12

55 <212> PRT

<213> Simian virus 40

60

<400> 19

5 Met Thr Ala Pro Lys Lys Lys Arg Lys Val Pro Val
1 5 10

<210> 20

10

<211> 37

<212> DNA

15 <213> Artificial Sequence

<220>

20

<223> Description of Artificial Sequence: oligonucleotide DNA

<400> 20

25

gccaccggtg cgagctcatg aacacgatta acatcgc

37

<210> 21

30

<211> 33

<212> DNA

35

<213> Artificial Sequence

<220>

40

<223> Description of Artificial Sequence: oligonucleotide DNA

<400> 21

45

cactagtggg cccttacgcg aacgcgaagt ccg

33

50

<210> 22

<211> 33

55

<212> DNA

<213> Artificial Sequence

60

<220>

5 <223> Description of Artificial Sequence: oligonucleotide DNA

<400> 22

10

ccggatgact gtcctaaaga agaagcgtaa gct

33

15 <210> 23

<211> 25

<212> DNA

20

<213> Artificial Sequence

25 <220>

<223> Description of Artificial Sequence: oligonucleotide DNA

30

<400> 23

cccgggatta atacgactca ctata

25

35

<210> 24

<211> 33

40

<212> DNA

<213> Artificial Sequence

45

<220>

<223> Description of Artificial Sequence: oligonucleotide DNA

50

<400> 24

55 ccggtatagt ggtcgtatt aatcccgga gct

33

60

<210> 25

<211> 28

<212> DNA

5 <213> Artificial Sequence

<220>

10

<223> Description of Artificial Sequence: oligonucleotide DNA

15 <400> 25

aattcttaat acgactcact atagggcc

28

20

<210> 26

<211> 28

25 <212> DNA

<213> Artificial Sequence

30

<220>

<223> Description of Artificial Sequence: oligonucleotide DNA

35

<400> 26

catgggccct atagtgagtc gtattaag

28

40

<210> 27

45 <211> 42

<212> DNA

<213> Artificial Sequence

50

<220>

55 <223> Description of Artificial Sequence: oligonucleotide DNA

<400> 27

60

gatccgtcga cagatctccc tatagtgagt agtattactg ca

42

5 <210> 28

<211> 34

<212> DNA

10

<213> Artificial Sequence

15 <220>

<223> Description of Artificial Sequence: oligonucleotide DNA

20

<400> 28

gtaatacgac tcactatagg gagatctgtc gacg

34

25

<210> 29

<211> 26

30

<212> DNA

<213> Artificial Sequence

35

<220>

<223> Description of Artificial Sequence: oligonucleotide DNA

40

<400> 29

45 tatgccctat agtgagtcgt attaatg

26